

Farming for Conservation – BurrenLIFE Conference 2008

Building a Support Base – The Role of Teagasc

Professor Gerry Boyle, Director Teagasc

Introduction

The subject of my talk is the role of Teagasc in building a support base for conservation farming. First of all I agree Teagasc has a role, a very significant role, and has for many years been building a support capability for conservation farming primarily through its environmental research and advisory activities. Most recently, this involvement has led to Teagasc's commitment as partner to what I regard as Ireland's major farming for conservation project – BurrenLIFE. But before I go into all that I want to give you some background on Teagasc.

Teagasc Overview

Teagasc – the Agriculture and Food Development Authority – is the national body providing integrated research, advisory and training services to the agriculture and food industry and rural communities. The Teagasc Authority is appointed by the Minister for Agriculture, Fisheries and Food. It has representatives from the farming organisations, the food industry, the universities, the Department of Agriculture, Fisheries and Food and Teagasc staff.

Teagasc is a client-based organization which employs over 1600 staff in 100 locations throughout Ireland with an annual operating budget in excess of €170 million. Teagasc operates in partnership with all sectors of the agriculture and food industry and with rural development agencies. It has developed close alliances with research, advisory and training agencies throughout the world and is continuously seeking to expand its international contacts.

Around 75% of Teagasc's yearly budget comes from the Irish exchequer and EU funding with the balance generated from earned income. Some 40% of the budget is devoted to research with the remainder split half and half between advisory and training services.

Research services are provided by 200 research scientists and a comparable number of research technicians at nine dedicated centers. There are 500 advisors and regional specialists located at regional, county and local offices. The eight colleges and local training centers are staffed by college lecturers, technicians and education officers.

Agro-environmental Research Support

Johnstown Castle is Teagasc's research centre for the rural environment, and conducts both fundamental and applied research on a wide range of subjects including: water quality, gaseous emissions, nutrient efficiency, soil quality, agro-ecology, land use and organic farming. The principal aim of this research programme is to provide the necessary technical information to support sustainable agriculture and provide the scientific basis for conservation farming. This centre is now progressing plans to become a Centre of Excellence in soil and environmental research.

Several research projects past and present support conservation farming. Many are joint projects carried out in partnership with other environmental stakeholders. The following examples are particularly relevant to conservation farming:

EU ITAES Project

Teagasc is leading the work on environmental impact and optimal design of Agri-Environmental Schemes (AESs) for a project funded by the EU Sixth Framework Programme - ITAES (Integrated Tools to design and implement Agro Environmental Schemes).

A major finding of the project is that wildlife measures generally need to be better targeted to suit the geographical variability in natural conditions in the countryside. The Burren is an excellent example where the one-size-fits-all approach of national policy measures is not as appropriate as more locally-customised agri-environmental measures and actions.

Identification of high nature value (HNV) farmland areas in western Ireland, with specific reference to grasslands.

The EU Common Agricultural Policy (CAP) includes a commitment to halt biodiversity loss by 2010. The CAP aims to target high nature value (HNV) farmland *via* policy measures such as Less Favoured Area and Agri-Environmental Schemes. HNV farmland is a specific indicator in the EU evaluation guidelines for Axis 2 (Environment). A Teagasc Project (Walsh Fellow, UCG) is underway to develop methods to better identify HNV farmland with specific reference to grasslands.

A GIS baseline survey of habitat types and vegetation composition in the karst region of the Burren, Co. Clare

In a 2-year collaborative study between University College Dublin and Teagasc, funded by the Research Stimulus Fund, a digitised map has been created using satellite imagery, which shows the distribution and extent of the broad habitats within the 384 sq. km study area of the 'High Burren'. A full field survey would be prohibitively expensive and time-consuming.

Field Margins and Watercourses: effects on mammals and birds

An important 4 year study into the effectiveness of existing field and watercourse margin measures in the Rural Environmental Protection Scheme (REPS) is ongoing. This project will contribute to maximising field and water course margins as a habitat for biodiversity and also ensuring better water quality. Among the expected benefits of this research are practical suggestions regarding potential new measures which could be implemented in future agri-environmental schemes

Rural Economy Research Support

The Rural Economy Research Centre (RERC) is Teagasc's Economics and Social Science Research Institute. It's mission is to produce high quality social science research and policy advice to improve the competitiveness and sustainability of Irish Agriculture and to enhance the quality of life in rural Ireland.

The RERC engages in a wide range of studies on rural viability, multifunctional agriculture and sustainable systems of agriculture. These include studies on the effect of economic, social and environmental policy reform on the sustainability of farms using data from the National Farm Survey. Other studies have focused on recreational activity on

marginal farmland. The information generated by the studies of sustainability, alongside the creation and implementation of sustainability policies and practices will play an important supportive role in the development of conservation farming into the future.

Social implications result from the provision of rural employment opportunities, the diversification of economic activities and the promotion of local products, services, craft activities and agri-tourism. Preserving environmental quality is also a precondition for developing lasting economic potential in rural areas. The ecological integrity and the scenic value of rural landscapes are key ingredients for making rural areas attractive for enterprise settlements, as a place to live, and for the tourist and recreation business.

New Research Initiatives

Scientific research will be one of the key drivers of the knowledge-based economy in Ireland in the future. The Government Strategy for Science, Technology and Innovation seeks to put Ireland firmly on the global map in terms of the excellence of our research and its application for the benefit of society. To allow this to happen, the Government has committed €8.2bn for science, technology and innovation planned as part of the National Development Plan for 2007-2013. Agriculture and food are key sectors of the Irish economy and investment in research in these areas will increase substantially over the period.

Teagasc is the leading organisation in Ireland in the fields of agriculture and food research. In line with the increased investment in science, technology and innovation, Teagasc's Research Vision Strategy is to achieve world class competence in selected key areas by establishing a number of Centres of Excellence. This will involve capital expenditure of €27m and the employment of an additional 30 leading world class scientists from Ireland and abroad.

The key areas of work are Animal Bioscience; Plant Bioscience and Bioenergy; Environment and Land Use; Food and Health; Economics and Rural Research.

Farm Advisory Support

Teagasc advisory is in contact with some 80,000 farmers and rural dwellers each year, of which approximately 45,000 avail of our client service. Some 500 advisers and specialists, located at over 80 centers throughout Ireland, help farmers to maximise profit while practicing sustainable farming systems. This involves the transfer of the latest research results from home and abroad.

Teagasc is the largest provider of REPS Services in Ireland. Over half of Teagasc clients (25,000) participate in REPS and Teagasc is committed to encouraging and supporting a further 6,000 clients to join the new REPS 4 version in the period to 2013. The new scheme places a welcome emphasis on biodiversity enhancement which is much more demanding for both advisors and farmers. This is being resolved through the up-skilling of advisors and the provision of custom designed courses for farmers.

Sometimes there is a perception that environmental requirements are in conflict with progressive farming and this can create a negative view of measures designed to achieve sustainable development. Teagasc promotes the view that commercial and environmental requirements are

interconnected and progressive farming decisions should embrace both in a balanced and harmonious way.

As a partner in the BurrenLIFE project Teagasc Advisory is providing important scientific support to the Project Team through ecology and conservation specialist Dr James Moran who co-ordinates the Teagasc input. His work has included profiling the agricultural capacity of the Burren grasslands, the development of new concentrate feeding systems on winterages, compilation and digitising of information on land use in the Burren and the development of agri-environmental measures better suited to the Burren. He also leads the transfer of new farming technology through the BurrenLIFE demonstration farms. This work is also supported by the local Teagasc advisory service. Another significant Teagasc input is the socio-economic and agricultural monitoring on the special Burren LIFE monitor farms.

A hallmark of the work of the BLP has been its practical, farm-level approach. All relevant project actions are fully tested from the farmer's perspective – looking closely at the impact of actions on animal health, as well as farm input and labour costs. This is vitally important in order to future-proof the outputs of the project which must make good agricultural and economic sense if they are to gain widespread acceptance and adoption in the longer term.

In Teagasc we envisage that the work of the BurrenLIFE project will lead to the development of an advisory blueprint for the Burren as a whole. I would also envisage that the infectious enthusiasm generated by the Project Team lead by Dr Brendan Dunford will be an inspiration for communities in other high nature value areas enabling them also to harness support for the development of farming for conservation. Likewise the successful BurrenLIFE partnership model between NPWS, Teagasc and IFA can be replicated in support of such initiatives.

I understand the BurrenLIFE Project has already attracted considerable interest from upland areas such as the Comeragh Mountains in Waterford and the Magilacuddy Reeks in Kerry, Connemara and many other areas where farmers and conservationists are beginning to work in partnership to develop sustainable farming projects. There is the danger that farming activities in these marginal production areas on farms that are difficult to farm or are less than viable may be abandoned, resulting in the loss of traditional landscapes. This will affect the unique natural habitats including high nature value farmlands. We must work harder at developing alternative socio-economic models for sustainable farming in these areas.

Adult Training And Life Long Learning Support

The provision of adult training and life long learning support to the farming community is an important Teagasc priority. With the ever-changing role of farming, especially in relation to the environment, animal welfare, nutrient management and business development, the farming practitioners of today must keep themselves continuously informed. To meet this demand, Teagasc Advisory provides a comprehensive range of adult training programmes at local offices in each county. Courses cover a wide range of subject matter, from leading-edge technology and financial business training to forestry, environment management, food safety, animal welfare, occupational safety and equine management.

Up to 9,000 farmers attend our adult courses each year. About half of these are REPS participants. The REPS courses, in particular, have facilitated the knowledge transfer that has underpinned the implementation of the agri-environmental measures at farm level. This is

particularly so in the case of conservation farming and built heritage protection. The further development of courses and demonstration farms is a priority for REPS 4

The Teagasc eCollege co-ordinates the delivery of on-line agricultural, horticultural and food sector training. These courses are primarily delivered via the web but an element of practical training is provided in all cases.

Teagasc Foresight

Teagasc is currently involved in a Foresight exercise designed to establish a broadly-shared vision for agri-food and rural economy in 2030. It aims to establish the knowledge requirements to strengthen the strategic capabilities of Teagasc and its relevance to its stakeholders, as well as enabling it to provide proactive leadership in a rapidly changing open-market environment.

Our vision for Teagasc in 2030 is of an internationally recognised centre of excellence in scientific knowledge transfer and a leader and supporter of innovation in the new knowledge-based bio-economy. This will be based on partnership, accountability and a pursuit of excellence and quality in all of its activities for the benefit of all citizens.

Conclusion

Finally, I believe this BurrenLIFE Conference can make an important contribution to our understanding of farming for conservation. Teagasc has learned a lot from our involvement in the Project overall. We know from experience one size will not fit all. I hope the project blueprint can define different models of agriculture for different areas of the Burren building on the strengths and supporting the weaknesses of each one. Teagasc is committed to continuing its support for the BurrenLIFE Project and its successor.



**Farming for Conservation
Research & Monitoring Requirements**

“Filling the Information Gaps”

- **Farming for Conservation**

- » *Decisions on management practices - appropriate at farm and landscape level*
- » *Often experience based*
- » *Limited evidence-based evaluation*

- **Research:**

- » *Not tailored*
- » *Not accessible*

Ag-Biota

- *Research & Monitoring – Priorities for EU BAP for Agriculture*
 - » *Monitoring & evaluating REPS*
 - » *Farmland management – impact on biodiversity*



? *Relevance in HNV & for Farming for Conservation*

Filling the Information Gaps at the Local Level

- **Research & monitoring:**

- » *Tailored to local agricultural & conservation needs*
- » *Carried out in the area to which it is relevant*

- **Research and monitoring:**

- » *Practical and workable*
- » *Generate information that is useable*

What do we want from Research & Monitoring?

- **Relevant and useable information:**
 - » *To develop the farm management practices > deliver conservation aim*
 - » *Solid basis for providing advice*
 - » *To develop agri-environment schemes tailored to local/regional situation*
 - » *Assess & evaluate management actions in achieving the conservation aims*
 - » *Justify funding for Farming for Conservation*

Local Research & Monitoring

Examples from BurrenLIFE

- *Agricultural*
- *Ecological*
- *Socio-economic*





BurrenLIFE Agricultural Research: Forage Sampling

- **Nutritional value of the winterage**
 - » *Digestibility*
 - » *Protein content*
- **Results:**
 - » *Quality decreases over winter – lowest from Dec - Apr*
 - » *Protein content low (5-8%), fibre high > low digestibility*
 - » *Nutritional value equivalent to poor hay*
 - » *Trace minerals Cu, Mg, Se & I low*
- **BurrenLIFE concentrate ration (Teagasc):**
 - » *14% crude protein > increases ability to digest low quality forage*
 - » *Minerals added to meet requirements*

BurrenLIFE Agricultural Monitoring: Feed Use

“Are we succeeding in our aim of reducing silage feeding?”

- **Amount of silage, hay & concentrate fed/farm**
 - » *Baseline: Pre BurrenLIFE*
 - » *Subsequent winter feeding periods*
- **Results 2006/7:**
 - » *Silage: Down by 56%*
 - » *Hay: Down by 46%*
 - » *Concentrate: Up by 174% (91% BurrenLIFE ration)*



Ecological Research & Monitoring:

Main aims:

- » *Increase local knowledge*
- » *Enable evidence-based assessment*

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- **How much monitoring & what level?**
 - **Can be time hungry**
 - » *Don't be afraid to take the simple option*
 - » *Easy, quick monitoring is better than no monitoring*

Impact of Grazing on Sward & Flora





Impact of Grazing on Hazel Seedlings & Saplings



Impact of Grazing on Hazel Seedlings & Saplings

Early Results (3 farms)

- **After 2 years:**
 - » *81 – 87% survival rate*
 - » *Farm 1 = population decrease of 8.3%*
 - » *Farm 2 = population increase of 12%*
 - » *Farm 3 = population increase of 21%*
- **Generally shorter!**



- **Mature hazel = v. important habitat**
- **Rapidly encroaching onto priority grassland habitats**
- **Targeted scrub removal to protect conservation interest of these grasslands**
 - » *Open paths to improve cattle movement*
 - » *Encroaching hazel & blackthorn on priority grasslands*
- **Available Research**
 - » *Experience or anecdote – little evidence*
 - » *Different species*
 - » *Different terrain*



Removal Techniques & Retreatment



Socio-Economic

- **Cost all actions**
 - » *Concentrate > silage*
 - » *Scrub removal & retreatment*
- **Teagasc National Farm Survey**
 - » *Socio-economic comparisons between LIFE farms, other farms in the region and across the country*

Key messages for the Development of Advisory, Research and Monitoring Support

- **Advisory support needs to be:**
 - » *Participatory – bottom-up approach*
 - » *Based on local knowledge, local research and local monitoring*
 - » *Adaptive – respond to lessons learnt and changes in the agricultural environment*
- **Research and monitoring needs to be:**
 - » *Practical*
 - » *Workable*
 - » *Generate information that is useable*
- **All need to be:**
 - » *Tailored to the local agricultural and conservation needs*
- **Adequately resourced:**
 - » *Finances*
 - » *Expertise*

FARMING FOR CONSERVATION: RESEARCH, MONITORING & ADVISORY REQUIREMENTS.

Dr. Sharon Parr (BurrenLIFE)

Part II: Research & Monitoring

Farming for conservation involves making decisions on management practices that are appropriate both at the farm and landscape level. However, despite a large body of scientific research, conservation practice is often based on personal experience, with limited evidence-based evaluation of what works and what does not. Two reasons for this are that much of the scientific research:

- is not tailored to the end-users, in that it is not sufficiently applicable or transferable in terms of the local agricultural practices and conservation issues.
- is not easily accessible by dint of location or lack of translation from academic to practical language.

For example, the aims of the Ag-biota Project based in University College Dublin, reflect the research and monitoring requirements identified as priorities for the European Biodiversity Action Plan for Agriculture. It is intended that its findings will form a basis for monitoring and evaluating REPS (Rural Environmental Protection Scheme) and that it will identify the main farm management practices that have an impact on biodiversity. Whilst this research is both necessary and commendable, the fact that it concentrates on intensive grassland farming where the main habitat is species-poor improved grassland, means that however good the research is, its overall relevance and applicability to High Nature Value farmland and Farming for Conservation in areas such as the Burren, is in doubt?

While such generic research does have a role in Farming for Conservation, the major requirement is for research and monitoring that can fill the information gaps at the local level. Therefore, we need research and monitoring that is tailored to the local agricultural and conservation needs and which is carried out in the area to which it is relevant. So if we're talking about Farming for Conservation in the Burren the majority of the research needs to be carried out in the Burren and not extrapolated from elsewhere. If we do this, we will end up with research and monitoring that is both practical and workable, and which will generate information that is useable.

But what do we want from research and monitoring? Primarily, we want to obtain relevant and useable information that can be used:

- To develop the farm management practices needed to deliver the conservation aim.
- As a solid basis for providing advice.
- To develop agri-environment schemes tailored to local/regional situation.
- To assess and evaluate the success or failure of management actions in achieving the conservation aims. Because without evidence, how can we say whether something works or not?
- To justify funding for Farming for Conservation - if we can show something works then there is a far stronger argument for funding .

At this point, I am going to use examples of the research and monitoring that we are carrying out as part of the BurrenLIFE Project, to illustrate why local research and monitoring is so important for Farming for Conservation. Our research and monitoring is carried out in three broad areas: agricultural, ecological (which involves assessing the outcome of the conservation actions) and socio-economic and I am going to start with an example of our agricultural research.

A main aim of the BurrenLIFE Project is to improve the level of grazing on the Burren winterages and one mechanism for achieving this is by reducing or, if possible, replacing silage feeding with concentrate feeding. However, to do this we needed more information as to the nutritional value of the forage on the winterages, as little existed. To this end, we embarked on a three year program of forage sampling and analysis during which, we looked at factors such as the digestibility and protein content of different vegetation types that occur on the winterages. The results to date demonstrate that forage quality decreases over the winter and is at its lowest between December and April. The protein content is low (5-8%) and fibre content high which leads to low digestibility. Overall, the nutritional value is the equivalent of poor hay and levels of the trace elements; copper, magnesium, selenium and iodine, are low. Armed with this information we were able to seek advice from nutritionists in Teagasc who helped to formulate the BurrenLIFE ration. This contains 14% crude protein which increases the cow's ability to digest the low quality forage and thus encourages grazing. Minerals and vitamins are added so that the requirements of the suckler cow are met when the ration is fed at a rate of approximately 2kg each day.

In order to ascertain whether we were succeeding in our aim of reducing the amount of silage fed on the winterages, data was collected from each participating farm as to the amount of silage, hay and concentrate that they fed pre-BurrenLIFE and during the subsequent winter grazing periods. The results for 2006/7 show that the amount of silage fed had decreased by 56% and the amount of hay by 46%. In contrast, the amount of concentrate had increased by 174% (91% of which was the BurrenLIFE ration). So yes, we have been successful thus far which means that cows on the BurrenLIFE farms must now be obtaining more of their food requirements from the available grassland forage.

Ecological research and monitoring is a major part of the BurrenLIFE Project, our main aims being to:

- Increase the local knowledge.
- Enable evidence-based assessment of conservation actions.

One of the major issues that arises when planning a monitoring programme is: how much monitoring is needed and at what level does it need to be carried out? Monitoring can be very time-hungry and where resources are limited it is probably better to take the simple option as using quick, easy monitoring methods is better than no monitoring at all. For example, within BurrenLIFE, we are trying to monitor the impact of grazing on an area of approximately 2,500 ha which is far too big for detailed monitoring to be carried out over the whole area, so we assess the impact of grazing on the sward and flora at two different levels. The first is very simple and involves assessing the grazing level on each management unit at the end of every winter grazing period using a 1 – 5 scale. From this we know whether an area has been undergrazed, well

grazed or overgrazed when compared to our target grazing level. The second involves much more detailed vegetation monitoring using semi-permanent 1m² quadrats to examine changes in plant composition and frequency on selected sub-sites. Plant frequency is being recorded rather than cover as while species diversity is high, the cover of individual species is generally low. This increases the likelihood of observer error and makes it less likely that genuine change will be detected.

Another area of our research and monitoring that is tailored to the specific needs of Farming for Conservation in the Burren is the impact of grazing on hazel seedlings and saplings. It was hoped that by getting the grazing right, the spread of hazel would be stopped or slowed. The impact of grazing is being assessed by mapping the locations of hazel seedlings and other tree and scrub species, using permanent 5m² or 2x10m quadrats. Each seedling is also measured and any damage, past or present, noted. Early results from three farms recorded a survival rate of between 81-87% two years after the initial assessment. This relatively small decrease is disappointing but it becomes more so in light of the fact that whilst there was an 8.3% decrease in the number of seedlings on one farm, the numbers rose by 12 & 21% respectively the other two. Interestingly, the majority of seedlings were shorter than they were at the start of monitoring and the proportion showing damage had increased. While it is too early to draw conclusions, the results suggest that grazing is not stopping the expansion of hazel but that it is suppressing its growth. These preliminary results have important connotations and underline the importance of one of our other areas of research.

At this point I want to state categorically, that the BurrenLIFE Project recognises that the mature, established hazel scrub found in the Burren is a very important habitat in its own right and is one that we have no intention of removing. However, a combination of factors means that in some areas hazel is rapidly encroaching onto the priority grasslands that we are duty bound to protect under European law. In response, we are piloting a programme of targeted scrub removal in order to protect the conservation interest of these grassland habitats. Two approaches are being employed:

- The opening of paths through scrub so as to improve cattle movement and grazing within areas, and to facilitate herding.
- The removal of encroaching hazel and blackthorn from priority grassland habitats.

Despite, a significant body of work, most of the information available on scrub removal is based on experience or anecdote with little hard evidence. Furthermore, what information there is, is for different species and different terrains to those with which we are faced in the Burren. Hence, we are assessing a number of removal and retreatment techniques in terms of their practicality, feasibility, efficacy and conservation ethos.

Our final area of research and monitoring is very important and focuses on the socio-economic implications of Farming for Conservation in the Burren. All of our project actions are costed e.g. the financial implications of replacing silage feeding with concentrates and the costs of scrub removal and retreatment. Detailed information regarding individual farm finances and resources is being obtained via Teagasc's National Farm Survey, which has been extended to all of our monitor farms. This will enable us to put a cost

on Farming for Conservation in the Burren both in terms of economics and human resources – something that is essential if Farming for Conservation is to become a reality.

So to conclude, our key messages for the development of the advisory, research and monitoring support requirements that are needed if farming for conservation is to be successful are:

- Advisory support needs to be:
 - Participatory – bottom-up approach
 - Based on local knowledge, local research and local monitoring
 - Adaptive – respond to lessons learnt and changes in the agricultural environment
- Research and monitoring needs to be:
 - Practical
 - Workable
 - Generate information that is useable
- All need to be:
 - Tailored to the local agricultural and conservation needs

And finally, it is essential that research, monitoring and advisory support is adequately resourced in terms of both finances and expertise.

Speech by

Minister for the Environment, Heritage and Local Government

Mr John Gormley TD

on the Occasion of the

BurrenLIFE Conference

Ennistymon 25 February 2008

Sustaining Ireland's Heritage – the challenges and the opportunities.

It is a great pleasure for me to be with you at this first-ever international conference on the Burren – Farming for conservation. It is a pleasure to visit this marvellous landscape of limestone pavement and natural habitats, rich in rare and beautiful flora and fauna.

With BurrenLIFE, which has organised the conference, we have reached beyond the half-way stage of a conservation and farming project of truly absorbing interest and high importance. I wholeheartedly support this project and I believe it serves as a template for how we engage with the community on specific natural and heritage issues.

I have been asked to say something of a more general nature about the challenges and opportunities of sustaining Ireland's heritage, before returning to the topic of the Conference in conclusion.

Ireland's rich and distinctive natural heritage has been shaped by its insular status, the mild, moist climate and the variety of rock and soil types. As an island which became separated from the continent of Europe relatively early after the last Ice Age, we have fewer species of plants and animals than

neighbouring countries. Nonetheless, we have important populations of certain species which are rare, or have declined in number, elsewhere, and internationally important populations of some species. For example, Ireland is a European stronghold for the Killarney fern, the lesser horse-shoe bat, the pearl mussel and the otter, to mention but a few. It also has internationally important concentrations of waders which overwinter here.

In the plant world Ireland has an abundance of so-called 'Atlantic' species - those plants intolerant of severe frost or great heat and which thrive in the humid climate, including heathers, gorse, bluebells. It is also very important for mosses, liverworts and lichens, some of which reach their most northerly locations in the world. As a result we have habitat types that have their European headquarters in Ireland, or are even unique to Ireland.

We have the moss and lichen-rich oak and ash woods like those in Killarney National Park, the raised and blanket bogs like Ballycroy, the machair or coastal sand plains in Donegal, and last, but by no means least, the Burren.

The Government recognises the importance of our natural heritage, the challenges of ensuring its preservation, and the opportunities that such a rich diversity can provide for our people. The National Parks and Wildlife Service has established 6 National Parks and 78 Nature Reserves. It has nominated 13,500 square kilometres of land as Special Areas of Conservation, 121 Special

Protection Areas, 148 Natural Heritage Areas, with a further 630 likely in the short to medium term.

In addition to the natural heritage, our generation is entrusted with the care of a remarkable cultural legacy in the form of our monuments and historic buildings.

The preservation of our built heritage is fundamental to an understanding of our past and is a primary concern of Government. The protection and safeguards accorded to it make an identifiable contribution to the needs of society. This contribution is in the first instance aesthetic. But heritage also has an ancillary value through cultural tourism. It enhances a local sense of place and belonging and it fosters pride in our local community and in our children.

We face many challenges in the protection and preservation of our built and natural heritage resulting from our recent economic expansion, infrastructure provision and certain forms of tourism. Increasingly, climate change is being perceived by world heritage experts as a significant threat to the conservation and protection of both the built and natural heritage. The State must strive to achieve a balance to ensure sustainable development, and to protect agriculture, tourism and local communities. These are the challenges facing us as heritage policy makers.

It is the role of the State to protect and enhance our built and natural heritage through effective laws and policies. Effective monitoring, public awareness, education and advice all have a role to play in this.

There is a considerable body of legislative protection for our archaeological heritage, including The National Monuments Acts and the Planning acts.

They provide protection, but I believe they could be considerably improved and that is why I have undertaken a review of archaeological procedure and practice.

Ireland has also ratified the European Convention on the Protection of the Archaeological Heritage, the Valetta Convention and the UNESCO World Heritage Convention concerning the protection of the World Cultural and Natural Heritage.

The Burren

In the Burren, we have possibly the best, and indeed most important instance, of the challenges facing Ireland in terms of protecting our built and natural heritage.

300 million years of geological and natural history have combined with 5,000 years of human development to create a unique environment stretching to more than 50,000 hectares.

Its geology, flora and fauna is exceptional. It lies on massive beds of Carboniferous limestone, formed from accumulated remains of marine plants and animals, the inhabitants of a warm, shallow sea which existed here about 320 million years ago. Today, fossils of these animals, including corals, can be seen in the rocks throughout the area.

The Burren is the finest example in Western Europe of a landscape moulded by the combination of glacial activity and the solution of limestone by water. These processes have formed the cliffs, escarpments, pavements and terraces of the Burren hills.

Rain has dissolved and weathered the rock, creating clints and grikes and draining rapidly underground to create subterranean watercourses and spectacular caves. The rain water often re-emerges in Turloughs which are a common feature of the landscape.

The Burren is also one of the most fascinating botanical regions in western Europe, with plants normally found in widely separate parts of the continent coexisting beside each other. Thus, mountain avens, a species usually found in sub-arctic and alpine areas, can be found alongside such southern European species such as maiden-hair fern and the dense-flowered orchid, whose distribution is centred on the Mediterranean.

The Burren National Park, managed by the National Parks and Wildlife Service comprises 1,673 hectares situated on the south-eastern edge of the Burren where the limestone hills fall away to lowlands covered by glacial-drift soils. Eighty-four species of birds have been recorded in the Park. These birds include rare or endangered species. Yellowhammers, now uncommon in the Irish countryside, frequent the fields and hedgerows. Kestrels can be seen hovering, as they quarter the ground looking for prey. Peregrine falcons and hen harriers are also regular visitors.

Amongst the many mammal species can be seen the elusive and rare pine marten. Amongst the seven species of bat, which inhabit the National Park, is the lesser horseshoe bat, a species which is endangered in an international context. The Burren is also very rich in butterfly species, again including some which have very local or restricted distributions in Ireland.

Overall, in the Burren we find a remarkable concentration of habitats as well as species associated with the unique properties of limestone and karst landscapes; limestone pavements, orchid-rich grasslands, turloughs, petrifying springs and hazel scrub. Many of these are designated under the EU Habitats Directive and some have 'priority' status.

This rich natural heritage is under threat from a variety of sources, including development, pollution, climate change and changes in farming practices.

Farming is hugely important here in the Burren. Without the gentle hand of human agriculture over the last five millennia, the Burren as we know it could not have evolved.

Many habitats and species have evolved with agriculture over millennia. The landscape and flora of the Burren are the result of thousands of years of farming and human activity where man has lived and worked in close harmony with nature, which has in turn adapted to and evolved with relatively slow changes in agricultural practices.

However, because of economic forces not in the control of those who farm here, the changes are so rapid and often so fundamental that wildlife does not have time to adapt.

Traditional grazing practices – including the unique system of ‘winterage’ and careful management to prevent overgrazing - help to maintain the rich flora by controlling the dominance of the more vigorous grasses and scrub. However, modern pressures for the intensification of agriculture, the centralisation of production in large units and depopulation have led increasingly to the

abandonment of the land, a reduction in grazing activity, the development of coarse grasses and the invasion by hazel scrub.

These changes in agricultural practice can have adverse consequences for nature conservation, resulting in a loss of the biodiversity of plant and animal life, including some of the rare flora for which this area is renowned.

The presence of man in this area across the centuries - for at least 5,000 years - is testified by the many megalithic tombs and other ancient monuments in the area. Scrub encroachment threatens not only the habitats but also damages these monuments.

The archaeological monuments on the Burren stand as testament to the rich agricultural heritage of the area since Neolithic farmers first began to exploit the abundance of its natural resources. These early farmers shaped the Burren landscape we see today. They have left us with a wealth of monuments some of which are of world class significance. Today's farmers have inherited the custodianship of these special monuments from their farming ancestors.

An additional threat to the heritage of the Burren is from the removal of water-worn limestone pavement for the horticultural industry. The direct destruction of limestone pavement is occurring as a result of both development, such as

housing, and the removal of surface rocks for landscaping and the garden trade. This latter activity appears to have increased in recent years in Ireland as a result of protection measures in England. Tourism is also a threat and while the educational value of limestone pavement must not be overlooked it is important that tourism is based on sustainability. It must be recognised that Limestone Pavement is a non-renewable resource and cannot be replaced.

Limestone pavement is a priority habitat under the EU Habitats Directive. My Department has recognised its importance by designating over 31,000 ha of land as Special Areas of Conservation, which include the Burren National Park and the Nature Reserve at Keelhilla. However, extensive areas remain unprotected.

As well as a moral duty, we have legal obligations under EU legislation to preserve our habitats. Despite the actions taken by my Department in establishing parks, reserves and protected areas, the latest evidence suggests many of our designated habitats are under threat or deteriorating. This includes the Burren habitats.

The challenge for us as a nation is to rectify this situation, and that challenge should not be underestimated. And nowhere in the country is that challenge more important than in the Burren.

BurrenLIFE

I see the BurrenLIFE Project as a very positive development towards improving the conservation status of the habitats within the Burren.

The presentations given at this conference demonstrate the fact that, with cooperation between government-sponsored agencies and local communities, these challenges can be met.

Cooperation is the key here. Earlier I spoke about how agriculture worked in harmony with nature to produce this rich and remarkable landscape.

To secure the Burren for future generations, we need to replicate that harmony. The full support and cooperation of all stakeholders, including farmers, local communities, research authorities and Government agencies, will be required if we are to afford the Burren a vibrant sustainable future.

This spirit of harmony is encapsulated in the Burren LIFE Project and because of its success to date, I have huge confidence that we will succeed.

The BurrenLIFE Project was conceived by the National Parks and Wildlife Service of my Department, following the ground-breaking study by Brendan

Dunford, in order to reverse the adverse consequences of changes in farming practice and land abandonment in the Burren. The project is generously supported by the European Commission which provides 75% of the funding, alongside the Department's and project partner's 25%. The remarkable progress achieved over three and a half years is due to the commitment of all the project partners including the extremely valuable technical assistance of Teagasc, the government agricultural research and advisory body and, of essential importance, the active support and participation of the Burren IFA, especially those farmers who are directly involved in the project.

A great deal has been achieved by the project team in demonstrating, in the most practical ways, to farmers, conservationists and the local community, that farming and conservation are essential partners in vulnerable, high nature-value farming areas. The lessons learned will, I am confident, have far-reaching and important, positive consequences not only in the Burren but across the country.

It marks a new departure and offers a new model in partnership between farmers and conservationists, which can and should be applicable in other parts of the country. It aims to develop an enduring basis for sustainable agriculture in the Burren which in a wider application will assist in conserving the habitats designated under the EU Habitats Directive to which the Government is fully committed.

The BurrenLIFE Project is a major step in the right direction, but we need to maintain impetus after the project finishes next year. I recognise that financial support for sustainable farming practices is an issue here, and I hope to raise this with my colleagues in Government.

Future Plans

With the BurrenLIFE model of consultation and partnership in mind, I believe there are a number of very positive options for the future of the Burren.

The Burren is often mentioned as a potential candidate for UNESCO World Heritage Listing. The Burren was included on Ireland's existing tentative list, which was submitted to UNESCO in 1992. A tentative list is an inventory of those properties considered suitable for inscription to the World Heritage List.

UNESCO considers a site of 'Outstanding Universal Value' when it has " a cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity and the permanent protection of it's heritage is of the highest importance to the international community as a whole".

In the Republic of Ireland, we have only two sites with World Heritage Status – Newgrange and Skellig.

There has been very limited work in the last decade on achieving World Heritage Status for additional sites, and I plan to redouble our efforts at achieving the status for a number of additional sites in Ireland.

I am currently exploring the possibilities for nomination of future sites for inscription from our existing “Tentative List”. I am also looking at proposals for a review of the Tentative List to see if there are additional sites around the country which could meet the exacting criteria to meet the standard of “Outstanding Universal Value”.

The inscription of a site brings with it onerous responsibilities and implications such as the requirement for careful management of sites and the strict control on any conservation works.

However World Heritage Designation is an immense honour for the site on which it is bestowed and brings with it a great sense of achievement and pride for the country and for the local communities. It fosters a great sense of awareness in our past and provides us with a sound footing for the protection of the site in question the future.

I believe we should be actively pursuing World Heritage Status for the Burren within the lifetime of this Government. It would, I believe, provide security and certainty for all those who live and work in the area, not least through providing the financial resources required allow all stakeholders to protect the future of the area.

I stress that it is one of just a number of approaches that can be taken in relation to the Burren, and that other options can also be examined in conjunction with the UNESCO site status. And I stress that any approach can only be taken with the support and cooperation of the local community.

It should also be noted that while the Burren would be a different type of UNESCO site in Ireland. World Heritage Status allows for the designation of dynamic living, working environments like the Burren. There are many examples around the world of such sites, most notably the Island of Öland in Sweden, which has similarities to the Burren. I understand there was a speaker from the island at the conference earlier today.

As a start in the UNESCO process, my officials will begin work shortly on a draft management plan for the Burren. But again, this will be done in full cooperation

and consultation with local interest groups to ensure that all potential issues can be identified and dealt with.

Conclusion

I would like to take this opportunity to thank those members of my own department who conceived this project and worked hard to obtain the necessary funding and whom I know continue to give it continuing support. My thanks are also due for the outstanding quality and degree of support given by Teagasc, as well as to the Burren IFA without whose participation the project would be impossible.

Finally, I would like to complement the Project Team. The range of skills and the commitment and dedication of Brendan Dunford, Sharon Parr, Ruairí Ó Conchúir and James Moran from Teagasc have been the driving force of the success project.

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