Case Study

Managing priority grassland habitats reliant on grazing

Creating a model of sustainable agriculture in Ireland

Agriculture and conservation in The Burren

The Burren (from the Irish *Boireann* meaning 'place of stone') is an area of limestone karst of over 72,000 ha, located in the mid-west of Ireland on the Atlantic coast. It is one of Ireland's iconic landscapes and amongst the finest examples of a 'glaciated karst' landscape in Europe. The distinctive geology combined with thousands of years of agriculture practiced in the area have produced a unique set of conditions which makes the Burren one of Ireland's most important regions for its flora, fauna and habitats.

Managing this heritage requires an understanding of the integral link between the agriculture practiced in the region and its biodiversity. Due to the warmth retention of the underlying limestone, the calcium-rich habitats and the region's resistance to waterlogging and erosion, the Burren has been long valued for its capacity to store over-wintering cattle before stock were moved to other grasslands for the summer months. Grazing on these areas, known as 'winterages', during winter removes the plant material that builds up over the summer months and has been shown to produce ideal conditions for annual crops of flowers, among them gentians (*Gentiana verna*) and orchids (e.g. *Neottia nidus-avis*) to prosper in spring and summer (BurrenLIFE, 2010a). This 'hard grazing' of the winterages (i.e. up to the start of May) also helps prevent scrub encroachment. Excessive summer grazing, in contrast, is associated with a loss of species richness (Dunford, 2002).

An iconic landscape: limestone skeleton moulded by ice and etched by water (Sharon L. Parr)

The Burren also owes its rich diversity of species and habitats to the vast range of local factors (such as altitude, hydrology, soil depth and type, rock cover, and accessibility) as well as the overall composition of individual farms (such as the relative location and extent of upland and lowland grasslands and the size of land parcels), which are critical in determining management on individual units of land (Dunford, 2002).

Natura 2000, key habitats and species and agricultural management

In recognition of the environmental and cultural importance of the region, many areas have been designated as SACs. In total, there are three main terrestrial SACs in the Burren, covering an area of 30,400 ha, incorporating 16 habitat types listed in Annex I of the Habitats Directive. The terrestrial SACs in the Burren are:

1. Black Head-Poulsallagh Complex SAC (5,572 ha) along the north-western coast.
2. Moneen Mountain SAC (6,070 ha) encompassing much of the central 'Uplands'.
3. East Burren Complex SAC (18,820 ha) which contains much of the lowland region, and features extensive limestone pavement and oligotrophic limestone wetlands.

Priority habitats under the Habitats Directive that occur at the sites include: turloughs (3180), semi-natural dry grassland and scrubland on calcareous substrates (*Festuco-Brometalia*) (6210), calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* (7210), petrifying spings with tufa formation (*Cratoneurion*) (7220), and limestone pavements (8240).

Non-priority habitats include alpine and boreal heaths (4060) and *Juniperus communis* formations (5130) on heaths or calcareous grasslands (5130). The Lesser Horseshoe Bat (*Rhinolophus hipposideros*), which is listed in Annex II of the Directive also occurs, as well the Irish Mountain Hare (*Lepus timidus hibernicus)* and *Pine Marten* (*Martes martes*).

The habitats occur in an intricate mosaic in which the different plant communities change subtly from one to another along a continuum (Parr et al, 2009) and therefore the relative proportions of habitat types are difficult to assess accurately. Nonetheless, within the terrestrial SACs there are approximately 18,000 ha of limestone pavement, 1,560 ha of species-rich limestone grasslands, 275 ha of turloughs, and 200 ha of *Cladium* fens. The diversity and range of plant communities present are dependent on extensive agriculture practices.

Species rich grassland (Sharon L. Parr)

In recent years, a number of changes have threatened this relationship to the detriment of the environment.

Farmers have been increasingly required to take on additional work to supplement farm incomes which has meant less time to access remote areas. At the same time, there has been a move away from a mixed farm system based around beef cattle 'stores'[1] to one almost completely dominated by suckler cows[2], in response to market demands driven by consumer tastes and accelerated by the 'Suckler Cow Premium Scheme', a headage payment designed to provide direct support to suckler cow producers.

These in-calf cows require more care and supplementary nutrients and as a consequence, farmers have steadily reverted to silage feeding on winterages or indoor housing and feeding (BurrenLIFE, 2010b).

This reduces foraging and contributes to abandonment of winter-grazed grasslands and, in some cases, to point source pollution of water resources.

[1] Store cattle are those kept on a low level of growth (often over winter) prior to fattening or 'finishing' when grass/fodder becomes more readily available (definition as per Dunford, 2002)

[2] Suckler cows are those whose primary function is to produce and nurture offspring.

Measures implemented to address conservation needs

Agri-environment schemes

Since 1995, there has been a specific agreement tailored for the Burren under the main agri-environment programme in Ireland, the Rural Environmental Protection Scheme (REPS), which sought to limit summer grazing and supplementary feeding on upland grasslands.

In 2000, a high proportion of the farmers (some 70%) in the Burren were in REPS, in part due to inherently extensive nature of farming in the area. Nonetheless, REPS did not deliver sufficiently proactive or targeted improvements on priority habitats to maintain their conservation status. Farmers complained about the lack of flexibility in REPS, such as the prohibition of any summer grazing on winterages, which limited their ability to respond to exceptional circumstances such as disease or extreme weather conditions.

Farmers meeting (Brendan Dunford)

The pilot scheme - 'BurrenLIFE'

The BurrenLIFE Project (BLP) was initiated to develop a model of sustainable agriculture that could be extended to the whole of the Burren region. In total, 20 pilot farms were selected, covering over 2,485 ha of farmland designated as SACs, to work with the BLP in developing new interventions and monitoring their impact. Individual farm plans were drawn up, and revised annually, following in-depth consultation between the farmer and the project team. Farmers could nevertheless opt out of all measures on their own discretion. Compensation was made for completed actions, at a rate of between 25-75% of total costs; those actions with a greater conservation value had a higher proportion of their costs paid for. It ran for five years between 2004 and 2009, with a total budget of € 2,230,487.

Removing scrub, repairing walls (Brendan Dunford)

Main successes/outputs of the pilot scheme

The BLP pilots resulted in the development of a blueprint for sustainable agriculture in the Burren, which succeeded in extending winter grazing on traditional winterages by 25% (as measured in terms of time spent on winterages, i.e. grazing days). This was achieved through:

- Improving access to winterage sites by clearing scrub from 55 km of paths and constructing 5 km of trackways.
- Installation of water pumps and tanks to address severe water shortages.
- Restoration of 15,000 m of internal stone walls to facilitate animal husbandry.
- Scrub clearance over 100 ha of priority habitat.
- Development of a low cost concentrate feeding system to meet the high nutritional requirements of suckler cows over

the winter periods, resulting in a 61% decrease in silage use[3].

- The BLP was able to produce a set of accurate costs for these various conservation works, as well as developing a series of best practice guides on grazing, feeding, scrub removal and farming for conservation. Monitoring of the impacts of these measures on priority habitats, water quality, animal health and farmer income found all had a positive impact, suggesting that in future a menu of such measures would be required for the conservation of priority habitats.

The enlarged scheme – 'Burren Farming for Conservation'

As a result of the favourable outcomes of the BLP and strong support from the local farming community, a follow up programme, called the Burren Farming for Conservation Programme (BFCP), was announced by the Irish Government in 2009.

It is funded under Pillar 1 of the CAP by the Department of Agriculture with a budget of € 1 million per annum over four years (2010-2013) using funds under Article 68(1)(a)(i) of EU Regulation 73/2009, which amongst others, allows Member States to pay for specific types of farming which are important for the environment.

Its objectives include ensuring the sustainable agricultural management of high nature value farmland across the Burren and maintaining or enhancing the conservation status of Annex I habitats.

While participants are provided with advice on how to maximise the environmental benefit from their land (via a site visit, development of farm plans and provision of best practice guidance), farmers are expected to use their own initiative to create the optimal crop of species-rich grasslands. Actions and priorities are therefore suggested by the farmer; the BFCP team (funded by the National Parks and Wildlife Service) will then advise on which actions the scheme can support.

The scheme is structured around three measures for which farmers can receive compensation. These measures are:

1. Production of species-rich limestone grassland.
2. Capital enhancement works (including scrub removal) on Annex I habitats.
3. Protection of designated land and other areas of Annex I habitat.

The innovative compensation arrangements developed for the scheme are considered key to achieving the outcomes desired. The measure 1 payment for the production of species-rich grasslands is based on field-level assessments of habitat condition and environmental services delivered. Each Annex I field is given a score of between 0-10 (where 0 is very poor and 10 is exemplary), based on criteria including grazing levels, feeding systems, scrub and weed encroachment, condition of water sources and site integrity[4]. This score, out of a proportion of ten, is multiplied by the field area (ha) and by the maximum payment per hectare (€ 120 for the first 40 ha, € 60/ha for 40-80 ha, and € 30/ha for 80-120 ha) to determine the payments made for that field[5].

Payment ranges under Measure 1 of the BFCP

Payments for measure 2 actions for capital enhancement are made at rates of between 25-75% of the total costs, depending on the relative environmental benefits provided, as in the BLP.

[3] http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=2661

[4] This measure is intended to be outcome focussed. However, as water bodies are principally subterranean, and hence more difficult to test their quality, the contribution of a farmer to good water quality is ascertained through the adequacy of measures to prevent water pollution (such fencing off water flows from cattle etc.).

[5] Hence a field of 5 ha which receives a score of 8 will receive (8/10) x € 120 x 5 ha = € 480.

All works are proposed by the farmer and individually mapped and costed by a trained advisor. Requirements of payments include the cessation of silage feeding in all Annex I habitats (both those designated and not designated) and meeting cross compliance and GAEC requirements on the whole farm. Payments are made only following satisfactory compliance checks of outcomes delivered.

Complementary actions: labelling

The Burren Beef and Lamb Producers Group Limited (BBLPG) was established under BurrenLIFE as a co-operative to produce quality meat from a quality environment, with the intention of boosting farmer income. It focussed its efforts on niche marketing and supplying local restaurants and farmers' markets.

However, despite a strong brand and farmer support, it required the input of a part-time coordinator to manage the logistics (e.g. collection of animals for slaughter, engaging with buyers, marketing etc.), which could not be funded without external assistance. It therefore became non-viable once BurrenLIFE was completed and is only likely to be revived in the future if external funding support can be obtained, for example via regional funds and/or as part of a broader marketing effort.

Restoration grazing (Brendan Dunford)

Success factors, constraints, opportunities and threats

Main outputs of the scheme

Initially projected to include 100 farms, the BFCP received applications from around 350 farmers from a total eligible number of between 400 to 500 farmers. As of December 2011, i.e. the end of Year 2, 143 farmers were included under the programme, impacting an area of 13,250 ha. This includes 39% of Black Head/ Poulsallagh Complex, 60% of Moneen Mountain SAC and 38% of the East Burren Complex SAC (BFCP, 2012). The BFCP has seen the introduction of a number of local innovations including solar water pumps, rainwater harvesters, a traditional Burren gate design and the use of bladed strimmers and chippers for scrub work.

The targeted grazing and feeding system, developed during the BLP, has greatly enhanced the sustainability of farm operations and has been a key element in achieving conservation benefits and efficient agricultural production (BurrenLIFE, 2010c). The new BFCP incentive scheme appears to have resulted in a greater proportion of high 'habitat condition scores', in year 2 of the scheme (BFCP, 2012).

The targeted conservation work (scrub clearance etc.) has had the added positive social impact of creating much needed employment in the area and increased knowledge transfer and skills retention. In addition, agricultural monitoring of animal health under the BurrenLIFE regime demonstrated that cattle's annual nutrient requirements are fully met (BurrenLIFE, 2010c).

Main success factors (and strengths) of the scheme

The high level of interest from farmers in the BFCP demonstrates their perception of the programme as a positive development rather than a burden. Probably the most important factor to which this success can be attributed was the decision to make all the actions farmer-led. This feature demonstrates a recognition by the BFCP team that farmers are the foremost experts on their own land and avoids any impression of imposing measures on farmers.

Despite lower maximum payments per hectare than those offered under the REPS (€ 120/ha top rate compared to € 242/ha under REPS), this arrangement appears to be viewed more favourably by farmers. In addition, the partial payment of infrastructural improvements (under measure 2) incentivises the farmer to select those actions that overlap with his/her own priorities, and therefore are more likely to be carried out and maintained to a high standard.

The BFCP provides greater flexibility in grazing of winterages than the pre-existing REPS scheme, by measuring outcomes rather than the completion/omission of actions. This addressed farmers' concerns of restrictions on their ability

to respond to exceptional circumstances such as weather and market conditions and disease. This method also ensures tax-payer value for money compared to payments under REPS and rewards those who have historically managed their land well while presenting new farmers with an opportunity to improve.

Interestingly, farm plans designed under the BLP were long (typically about 14 pages), but these were reduced to 2-sides of A3 under the BFCP; one side a map of the farm identifying important habitats, cultural features and proposed actions, and the other a list of actions with a costing attached to each one.

Importantly, the programme succeeded in communicating to farmers the environmental benefits these measures could provide to themselves and their communities, who are the first users of the environmental resources of the area, including water quality and landscape amenity, rather than attempting to convince them of the need to satisfy external stakeholders or EU demands.

The project successfully forged strong partnerships between important stakeholder groups and agencies that represent different interests. The project also succeeded in raising awareness amongst the conservation community of the vital role of farmers. The project was helped by the sound scientific basis for all conservation work and strong support from the local farming community.

Weaknesses & constraints identified in the pilot scheme

The main weakness of the program currently is that it requires on-going financing from the government and is therefore potentially subject to change. Most of the programme sites are in private ownership and thus control over future management is limited. Despite the strong support in the community, the BFCP cannot accommodate all the interest due to restricted funds. There is also a considerable paper work required to obtain permissions for any actions that may influence the integrity of cultural monuments.

Opportunities for the expanded scheme

There is considerable opportunity to expand the basic principles of the scheme to other parts of the country and the broader European community, as they are replicable and very simple. Ironically, the economic downturn has signalled a return in interest in farming due to limited economic alternatives and a better availability of competitively-priced skilled local workers.

Capacity exists to continue the innovation led by farmers, which has led to new local businesses (such as the manufacture and design of gates, and solar panel pumps).

Threats & challenges facing the expanded scheme

The main threat to the program is the uncertainly around the continuation of funding, which runs until the end of 2013.

The increasing bureaucratic burden involved in securing permission to undertake conservation works in such a heritage-rich and highly-designated landscape as the Burren is also a huge challenge.

Also, average farmer age in the region continues to rise, with slow replacement from young farmers, signalling an imminent loss of knowledge, and traditional management skills and expertise.

There is also a poor outlook for the viability of livestock sector, particularly in marginal areas, as farmers cannot realistically increase livestock numbers without increasing farm size.

Conclusions: demonstration value for other areas and countries

The BFCP encourages a highly targeted, well researched and locally appropriate set of measures which have been shown to produce environmental benefits. A key component of the popularity of the scheme amongst farmers is the freedom given to farmers to carry out the actions they deem most appropriate (i.e. farmers are allowed to 'opt-in') as well as the output-based payment system which farmers feel is 'tough but fair'.

The new BFCP provides an incentive to raise the overall land quality and change the management of the farm, through the scoring and payment of a range of environment criteria, and thus incentivising farmers to significantly alter their farming practices.

The new scheme has already succeeded in convincing a very high proportion of farmers to move away from feeding silage on sensitive grasslands, - a huge change which previous schemes had failed to achieve. Even in its early stages the BFCP is beginning to show promising improvements in habitat condition.

References and sources of further information

BFCP (2012) Burren Farming for Conservation Programme year 2 summary.

BurrenLIFE (2010a) Sustainable grazing of Burren winterages. http://www.burrenlife.com/best-practice-guides.php.

BurrenLIFE (2010b) A guide to feeding cattle on Burren winterages.

BurrenLIFE (2010c) BurrenLIFE Project. Annual Newsletter. Winter 2009 / Spring 2010.

Dunford, B (2002) *Farming and the Burren.* Teagasc, Blackrock, Ireland.

Parr, S, Dunford, B and Ó Conchúir, R (2009) Grasslands of the Burren, Western Ireland, in P Veen, R Jefferson, J de Smidt, & J van der Straaten (eds) *Grasslands in Europe of High Nature Value,* KNNV Publishing.

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