

Sustaining the Gwent Levels: Farm case studies



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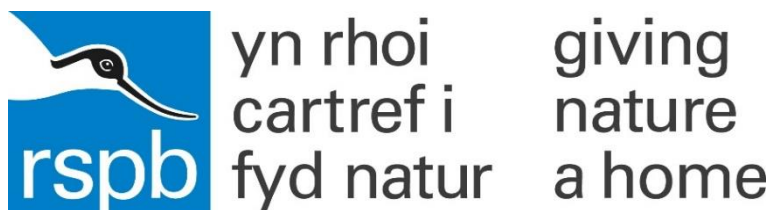
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In partnership with Living Levels.



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Introduction

Sustaining the Gwent Levels¹ was a collaborative project, led by RSPB Cymru, that worked closely with farmers and other partners to develop the understanding, knowledge, skills and experience needed to deliver the sustainable management of natural resources within the Gwent Levels.

The Gwent Levels is a flat, low-lying area between Cardiff and Chepstow (see Figure 1). It is a Landscape of Outstanding Historic Interest, being recognised as an example of a landscape ‘hand-crafted’ by people as shown by the patterns of settlement, enclosure and, crucially, drainage systems. These drainage systems support significant concentrations of rare and protected wetland species, with the result that the vast majority of ditches and reens on the Levels have been designated as Sites of Special Scientific Interest².

Most of the Levels is agricultural land, and a key element of the Sustaining the Gwent Levels project was identifying and co-operating with at least ten farmers, representing examples of typical Levels’ farming systems. The aim was to demonstrate best practice and develop a set of protocols and tools that could be employed at the landscape scale for the benefit of ecosystems and communities across the Gwent Levels and beyond. A suite of options was offered to each farmer, designed to help restore, protect and enhance the natural



Figure 1: Sustaining the Gwent Levels project area

¹ A Sustainable Management Scheme (SMS) funded by the Welsh Government Rural Communities – Rural Development Programme 2014-2020 through the European Agricultural Fund for Rural Development. The project took place between 2018 and 2021 and the partners were RSPB Cymru, Living Levels Landscape Partnership, Natural Resources Wales, Gwent Wildlife Trust, Centre for Ecology and Hydrology, National Farmers’ Union Cymru and Farming Connect.

² Chris Blandford Associates (2017) [Gwent Levels Landscape Character Assessment](#).

environment in conjunction with their usual farm activities. These included capital works and a variety of assessments leading to action plans. Twenty-eight farmers engaged with the scheme, and all the project targets were met or exceeded.

The options that were offered are briefly discussed next, followed by ten farm case studies.

Actions Undertaken

Project participants were able to choose from the following works and assessments according to their own interests and needs.

Capital Works:

- Ditch maintenance. Watercourses are a defining feature of the Gwent Levels and, as they keep the water level stable, maintenance of the drainage system is vital. As well as playing an essential role in flood management, they have ecological, historic and cultural significance. Natural Resources Wales have charge of the rivers and main ditches (“reens”), having taken this obligation over from the Caldicot and Wentlooge Internal Drainage Board. However, c. 1200km of field ditches are the responsibility of individual landowners, being cleared over a 10- to 30-year cycle³. Contractors were engaged to undertake this work.
- Willow pollards. Lines of willows have historically been planted to help stabilise the Levels’ ditch banks. These were traditionally pollarded – where the branches are cut back to the tree’s trunk, conventionally at a height where cattle and deer could not reach the new growth. This needs to be undertaken every few years to prevent the branches becoming too large and potentially causing splitting of the tree trunk. It also stops the trees from causing too much shading of the reens and avoids too many leaves dropping in. The re-growth is usually dense and is favoured by Tree Sparrows for nesting. It also forms straight branches that, when cut, have a variety of uses depending on their size, including as fuel and for crafts such as basket weaving. Contractors were employed to undertake pollarding work on individual trees identified by farmers and the Living Levels Natural Heritage officer.
- Orchards. Traditionally found near most farms in the Levels, many orchards included locally specific apple (particularly cider apple) and pear varieties. As well as being part of the cultural landscape and providing fruit and drinks, orchards provide habitats for a variety of wildlife species. Trees and advice from members of the Living Levels team were offered to assist with, firstly, planting new or re-establishing former orchards, and, secondly, renovating and enhancing existing orchards.
- Nest boxes. The Gwent Levels provides suitable feeding habitat for some declining bird species; particularly targeted in this project were Tree Sparrows, Kestrels, Barn Owls and Little Owls. However, there is a lack of nesting sites. While orchard maintenance and willow pollarding will eventually help to provide nesting habitats, nest boxes offer temporary assistance. Goldcliff Ringing Group provided and sited 259 such boxes, undertook monitoring of the boxes as far as was possible, and

³ Chris Blandford Associates (2017) Gwent Levels Green Infrastructure Strategy.

worked to raise awareness of these birds, through engagement with landowners and volunteers, articles, workshops and training.

Nutrient Management Plans

While most farmers regularly apply fertilisers to their soils to encourage crop growth, adding too much nutrition can be harmful as it can escape into watercourses where it damages the ecology. This is also expensive and wasteful for the farmers; therefore, Nutrient Management Plans were offered to groups of farmers through the Farming Connect Advisory Service. Assessments and advice were provided in two areas:



- **Infrastructure:** A consultant appointed by Farming Connect visited each farm and audited the farm's infrastructure to assess the extent to which it complied with current regulations. He then completed a report for the farm giving an overview of the business, the existing infrastructure and providing recommendations for improvement or compliance.
- **Nutrient Management Plan:** On each farm, the consultant took soil samples from 20 different parcels of land and tested them for acidity / alkalinity (pH), phosphorous (P) and potassium (K) levels. The resulting report covered the background to the farm, general soil health and a detailed analysis of the soil results with recommendations on how to improve the soil. The farmers in the group then had the opportunity to meet the consultant and discuss the report.

Water Quality Assessments

Staff from project partner Natural Resources Wales (NRW) undertook visits to both of the case study dairy farms as part of NRW's wider Dairy Project and also to fulfil the requirements of the Sustaining the Gwent Levels scheme. The purpose of the Dairy Project is to visit every dairy farm in Wales, providing pollution prevention advice on farmyard infrastructure, in order to reduce all sources of agricultural pollution and achieve compliance with the Silage, Slurry and Agricultural Fuel Oil Regulations (SSAFO 2010). Dairy Project visits involved a walk around the farmyards, assessing the infrastructure (slurry stores, yards, silage clamps, etc.) and providing on-site advice and guidance. Officers then calculated slurry production figures for each farm and produced a Dairy Project Report. The report, which was sent to each farmer, highlighted any conformity issues and provided requirements and recommendations in order to achieve compliance with the SSAFO Regulations and reduce pollution risk. Information was also provided on where and how to access further support / grant information.

Pollinator Surveys

In order to protect and improve biodiversity in the Levels, farmers were offered a survey of the pollinators and suitable pollinator habitat on their land, along with advice on any

improvements that could be made. These were undertaken by Sinead Lynch, Conservation Officer from partner organisation Bumblebee Conservation Trust, and Sustaining the Gwent Levels Project Officer Lewis Stallard during July and August 2019. At each holding, a broadly circular walk was undertaken, lasting 2-3 hours depending on the size of the farm. During the walk, areas of semi-natural habitat were identified along with any pollinators, the abundance of which was noted, and some of the more dominant plants recorded.

Economic Assessments

As a largely people-created landscape, the Gwent Levels relies on farmers for its maintenance, and this incurs costs to farm businesses in terms of time, effort and expense. With low farm incomes continuing to be of concern, especially in relation to small and family farms, farmers were offered the opportunity to re-examine their economic situation with Chris Clark of Nethergill Associates, using their own approach⁴. This involved examining the farm accounts to determine the level of output at which the farm is most economically viable.

The theory behind the exercise is that, unlike most production businesses, economies of scale (where continuous expansion should eventually produce a break-even point, and further expansion will further reduce unit costs as fixed costs are recovered over ever greater volumes) do not apply to farming in general. This is because farming is essentially about the exploitation of natural assets to produce goods of value. These natural assets are always limited and when these assets are exhausted (such as the grass running out) further output can only come with the purchase of substitutes (for example, livestock feed). This results in the variable costs of production having to be split into two components: productive variable costs (PVCs) which are incurred when *working with nature* and corrective variable costs (CVCs) which are incurred when forced to *substitute for nature*. Thus, farming is exposed to the phenomenon of passing the break-even point of maximum sustainable output (MSO), when, for example, the most efficient use is being made of the available grass, only to break back into unprofitability when this capacity is exceeded, and

Economic assessments were carried out for two farms to demonstrate the approach within this landscape and its associated farming systems. However, the information required to assess and present the MSO for individual farms is of a highly sensitive nature, including detailed economic data; thus, results are not provided here.

The findings of the two economic assessments indicate that:

- both farms have significant opportunities for profit improvement by reducing CVCs and moving down to the MSO level of output; and
- this will have the effect of reducing stocking rates.

For more information on the MSO (plus case studies) see “Less is more: Improving profitability and the natural environment in hill and other marginal farming systems”⁴.

⁴ See: Clark, and Scanlon, B. (2019) Less is more: Improving profitability and the natural environment in hill and other marginal farming systems. Available from: <https://www.wildlifetrusts.org/sites/default/files/2019-11/Hill%20farm%20profitability%20report%20-%20FINAL%20agreed%2015%20Nov%2019.pdf>.

additional costs are incurred. The assessments aimed to discover the point of maximum sustainable output for each farm.

The works and assessments undertaken on each farm are shown in Figure 2.

Farms	Capital Works				Nutrient Management Plan	Water Quality Assessment	Pollinator Survey	Economic Assessment
	Ditches (km)	Pollards	Orchards (ha)	Nest boxes (no. farms)				
Sluice House	1.476	0	0		Y		Y	
New	0.477	2	0.05		Y		Y	
Fair Orchard	0.958	0	0		Y		Y	
Arch	0.36	1	0	Y			Y	
Cross	0	8	0.63	Y	Y	Y	Y	Y
Great Newra	1.205	0	0.87	Y	Y		Y	
Hazel	0	0	0		Y		Y	
Whitson	0.375	5	0.66	Y	Y			
Great Porton	0.717	13	0	Y	Y			
Mead	0	8	0.38	Y	Y	Y	Y	Y
Total	5.568	37	2.59	6	9	2	8	2

Figure 2: Activities undertaken

Wider project elements

The specific farm-based actions described here form just part of the wider Sustaining the Gwent Levels project. Several of the farmers involved here also made valuable contributions to two additional elements⁵:

- Public goods workshops: Three workshops were organised locally by Resources for Change Ltd. and explored the idea of “public goods” as well as possible future markets linked to sustainable farming.
- Under-drainage project: There were two parts to the underdrainage project: the first looked at the hydrological effects of modern underdrainage compared to traditional methods with field drains and reens, while the second looked at the costs / benefits of the two drainage options.



⁵ The findings from these parts of the Sustaining the Gwent Levels project are available on request from cymru@rspb.org.uk.

Case Studies

Sluice House Farm

Activities undertaken: Ditches; Nutrient Management Plan; Pollinator Survey

Situated on the western periphery of the Wentlooge levels, in the shadow of Cardiff's eastern edge, Sluice House Farm is a significant sheep farm operating across a number of different holdings, from the foreshore through the Levels themselves and up into the higher ground to the north. The farm income was supplemented by contractor work undertaken for this project in helping to restore the degraded watercourses.

The farmer has been a keen participant in discussions surrounding future policies and payments that ensure the sustainable management of natural resources, and made valuable contributions to the project workshops exploring **payment for ecosystem services**. In addition to undertaking a considerable amount of **ditch work**, he has also participated in land and water management trials. The most significant of these involved measuring the efficacy of 'gripped' fields in facilitating **underdrainage**. Grips, along with ridge and furrow, are a traditional method of drainage – they are a system of regular surface ditches leading into the larger ditches that surround the fields –, and have the added advantage of increasing biodiversity. Another trial involved sowing 17 acres (nearly 7 ha.) of herbal ley with a specialist mix suitable for clay soils, which was felt to be very successful overall. This was primarily intended to benefit **pollinators**, but the sheep also seemed to enjoy it, and this resulted in an improved yield: the subsequent lambs sold very well. The farmer planned to explore the possibility of sowing herbal leys across the whole holding. In addition, the intention is to continue actively maintaining the ley by preventing the included rye grass from dominating.

It was the first time that a **Nutrient Management Plan** had been undertaken through a funding scheme and it is unlikely that it would have happened if it had not been facilitated by the project.

A biodiversity survey of the herbal ley trial site will be important in the next few years to establish its success, and additional surveys, perhaps undertaken in conjunction with organisations such as the South East Wales Biodiversity Records Centre (SEWBReC), can help to build the case for herbal leys on the Levels.

New Farm

Activities undertaken: Ditches; Pollards; Orchard; Nutrient Management Plan; Pollinator Survey

New Farm sits just west of the River Usk, on the Wentlooge Levels. At less than 20 acres (8 ha.), it is the smallest holding in the project, but perhaps the most intensively farmed. The farm produces eggs and has several thousand laying hens at any one time. A small herd of beef cattle is also kept.

This is a rare Levels example of a farm business that has achieved commercial success by maximising productivity. While this could potentially have negative environmental implications, the family are very conscious of these: therefore, they undertake their own nutrient management planning and invest in keeping the farm infrastructure updated. The most obvious issue is the considerable amount of chicken faeces that are produced daily. This is exported off the holding and away from the watercourses of the Levels to farmers on higher ground, where it is stored and then drilled into fields as a fertiliser.

In addition to some **ditching** work, additional **regripping** and the **pollarding** of an old willow, the family have established a new home on the holding. As part of the planning process, there was a requirement to establish a **new orchard**, therefore they were keen participants in the orchards element of the project, establishing trees at two sites. A **pollinator survey** was also welcomed, as small patches of scrub are kept on the holding that provide habitat for pollinators and other biodiversity in what would otherwise be cattle-grazed fields. While these scrub areas form the main points of interest, some fairly inexpensive changes to the grassland management, including buying in a few specific wildflower seeds and slightly altering the timing of cutting to allow plants to flower were suggested to improve the fields for pollinators. Financial help may be available for such activities.



Fair Orchard Farm

Activities undertaken: Ditches; Nutrient Management Plan; Pollinator Survey

Just to the west of the River Usk, Fair Orchard Farm is a substantial beef cattle finishing business in excess of 900 acres (360 ha.) over a number of holdings. There is much diversity within the fields, with a mosaic of habitat which is enhanced by the mob grazing approach undertaken. There are also extensive areas of ridge and furrow.

The farmer has been an important partner in the project, with a long-standing connection to the nature and history of the landscape. As part of maintaining a viable farm business, he has undertaken nutrient management planning in the past. He offered the project much insight into the challenges of farming the Levels, in addition to contributing to discussions on agricultural policy and what he feels needs to happen in the future. He has expressed concerns that external forces and lack of recognition are priming the landscape for disaster in the future that should be avoidable.

In addition to **almost a kilometre of ditch recasting**, the efficacy of the double gripped fields was measured for the wider Sustaining the Gwent Levels' **underdrainage investigation**. This has been crucial in helping to form a body of data that informs land management practices, the public benefits derived from them, and the role policy should play in helping to sustain them.

The farm management practices have resulted in a greater floral diversity than is generally the case on similar holdings on the Gwent Levels. Indeed, the **pollinator survey** found many pollinators, including several Shril Carder Bees – one of the United Kingdom's rarest bees – apparently making good use of the area, and only minor suggestions for improving the habitat were made, such as excluding animals from corner pockets of fields with temporary fencing.

The project officer was also allowed access to undertake **Lapwing surveys** on the farm, additional to the project work, as the farmer recognises the necessity of doing something about the declining biodiversity of the wider landscape.



Arch Farm

Activities undertaken: Ditches; Pollards; Nest Boxes; Pollinator Survey

Set over two holdings, Arch Farm sits within the parish of Nash and is near the urban area of Newport. As such, it is close to many of the planning pressures associated with the Levels, and has occasionally suffered pollution issues as a result of being downstream of population centres. It is an extensive beef cattle holding where the farmer has reduced production over the years in order to farm in a manner that is more in balance with the natural productive capacity of his land, and that takes a 'less is more' approach.

In addition to the capital works to restore the natural heritage features (**ditch restoration** and a **willow pollard**), the farmer's participation with the project's **public goods workshops** was very valuable, and he played an important role in developing the outcomes and findings. Further, his insights have been important in building a broad picture of how sustainable farming looks on the Levels.

Following early engagement with the capital works element of



the project, other activities were undertaken, specifically a **pollinator survey**, where the permanent pastures of the holding showed the presence of many flowering herbs such as Sainfoin and Bird's Foot Trefoil. Many pollinators were present including, encouragingly, a female Shril Carder Bee. There were also sightings of sparrows and finches, as well as a Barn Owl which appeared to be roosting in an ancient willow. As a result of these findings, the farmer also participated in the **nest box** project, providing additional nesting habitat.

Cross Farm

Activities undertaken: Pollards; Orchard; Nest Boxes; Nutrient Management Plan; Water Quality Assessment; Pollinator Survey

Cross Farm is a c.120 acre (50 ha.) holding on the Caldicot levels, approximately half of which lies within the National Nature Reserve (NNR). It is a dairy farm with about 90-100 milking cows at any one time and is farmed by a family partnership, the younger partners being the fifth generation on this farm.

As a Tesco assured farm and having such a significant proportion of their grazing within the NNR, the family are mindful of their carbon footprint and impact on the wider environment. They have previously undertaken nutrient management planning, and the holding itself has a great deal of permanent pasture, as well as the traditional ridge and furrow 'gripped' field drainage system which is important for both biodiversity and landscape functionality in the Levels. They have also had ditch renovation work done as part of the wider Living Levels project. The farm has fields that have modern underdrainage and have therefore played an important role in the project's underdrainage element that seeks to measure the efficacy of differing drainage systems upon the landscape. The farm partners have been very engaged with the Sustaining the Gwent Levels project, bringing welcome insight into the unique challenges of farming this landscape and working to improve their environmental credentials.

The works and assessments undertaken on Cross Farm have led to visible on-farm changes, a number of which are likely to serve as examples to other Levels farmers. One example is the re-establishment of a lost traditional **orchard** amounting to nearly two acres (0.8 ha.), which may eventually provide an additional income stream. Following a **Water Quality Assessment**, which gauged the quality of the farm infrastructure in its capacity to separate clean and dirty water within the farmyard, upgrades to rainwater management were made. The farm also received a **pollinator survey** with somewhat mixed results as fields vary from permanent pasture to recent commercial leys and also former arable land. However, it is hoped that some areas can be sown with a herbal ley, thus improving the grassland for biodiversity.

Some members of the family have also been keen to participate in exploring possibilities in the area of **Payment for Ecosystem Services (PES)**. At a workshop on this topic, they provided considerable insight into the practicalities of implementing such schemes on the ground and helped to build a bigger picture for policy makers of what PES schemes may be possible on the Levels.

Great Newra Farm

Activities undertaken: Ditches; Orchard; Nest Boxes; Nutrient Management Plan; Pollinator Survey

One of the few remaining holdings in Goldcliff that is intensively farmed and is commercially successful, Great Newra Farm is well over 100 acres (40 ha.) in size, including part of the National Nature Reserve. It is a mixed farm that has diversified into several different activities. While food production as seen as the farm's primary activity, the farmer is also keen to work alongside nature as much as possible.

The farmer has been heavily involved in the restoration of the landscape's natural heritage, including restoring **over a kilometre of ditch** habitat on his holding. Among the wide range of project activities undertaken, the **Nutrient Management Plan** is commended by the farmer as a valuable tool that other farmers should make use of.

While results from many of the project's activities are not yet apparent, Great Newra Farm has provided some particularly positive early outcomes. A little over a year after recasting,



several of the ditches were found to be brimming with the invertebrate life that is essential for Site of Special Scientific Interest designation. The take up of Little Owl **nest boxes** seems to have been a particular success and a Barn Owl nest box yielded two chicks in 2021. The farmer's willingness to make changes is vital; for example, while the **pollinator survey** showed little of interest, an agreement to trial a herbal ley was made. He also allowed **additional surveys** for Lapwing, Shril Carder Bee and bat activity. The equilibrium between nature and farming is seen by the farmer as essential to sustainable farming of the land, and an essential consideration in future agricultural schemes.

Hazel Farm

Activities undertaken: Nutrient Management Plan; Pollinator Survey

Although sitting outside the natural boundary of the Gwent Levels, Hazel Farm is a holding where decisions made here could have significant effects on the Caldicot side of the Levels landscape, as one of the major watercourses feeding into the Levels runs through the farm. The all-grassland farm is grazed by cattle during the summer and sheep through the winter. Its management is a contributing factor to the health of the SSSIs to the east of the River Usk.

The landowner, who is trying to adopt sustainable and regenerative farming practices, had already decided to restore traditional landscape features, most notably an area of 17 acres (7 ha.) of wildflower meadow. This restoration is being done in two parts, beginning with the over-sowing of an area with seed in September 2020 as part of the wider Living Levels Landscape Partnership project. Initial **surveys** have been hugely encouraging and it is expected that, as well as generating a good quality hay crop, the meadow will provide crucial foraging for pollinating species such as the Shril Carder Bee, and support wider invertebrate populations and the wider food web. The wildflower meadows are being established on a fluvial flood plain that is presently protected from flooding by embankments alongside the watercourse. There is the potential for the removal of these flood embankments in order to reinstate the natural processes of flood plain storage. This would result in a considerable benefit to part of the Caldicot Levels landscape through the alleviation of flood risk.

Within the Sustaining the Gwent Levels project, the farmer has been an important participant in the **Payment for Ecosystem Services discussions**, being a key contributor in workshops. As a retired consultant in land drainage and flood defence, and the present vice chairman of the Caldicot and Wentlooge Levels Internal Drainage District Advisory Board, his insights were particularly useful in developing the watercourses management outcomes.



Whitson Farm

Activities undertaken: Ditches; Pollards; Orchard; Nest Boxes; Nutrient Management Plan

Whitson Farm sits in the village of Whitson on the Caldicot Levels; a settlement first established by Flemish settlers, and which features many of the 'strip' field systems typical of Flemish farming. It is a modest sized holding with beef cattle and sheep.



The farmer has been engaged in all aspects of the capital works offered by the project, including having **375 metres of ditch recast** and **five large willows pollarded**. An **orchard** has previously been lost from the holding, but just over an acre (0.5 ha.) has been allocated to the establishment of a new one with a mix of local apple varieties. Additionally, **nest boxes** for all of the target species have been sited across the farm.

Beyond the core project activities, the farmer has allowed the **monitoring** of Lapwings and Shrike Carder Bees to be undertaken on the holding, as well as providing a place for bat monitoring to take place.

Although the ditching was not finished off to the farmer's expected standard, incurring extra work for him, other aspects of the works – particularly the new trees for the orchard – are reported to have been fine. Allowing the long-term bat detection survey was described as being no trouble, and may yield interesting results. For the future, it is hoped that when the orchard matures there will be new markets for the fruit that will help to diversify the farm's income.

Great Porton Farm

Activities undertaken: Ditches; Pollards; Nest Boxes; Nutrient Management Plan

Covering over 100 acres (40 ha.) in the parish of Nash on the Caldicot Levels, Great Porton Farm is located in the hamlet of Porton, a short distance from the seawall. The farm is a beef cattle holding which used to follow a production-based approach in order to maximise output. The farmers, a family partnership, have since decided to diversify their business and move out of intensive production. Thus, in addition to other sources of income such as contracting, they are part of the Gwent Solar Farmers scheme.

The farmers have been involved in the project from the beginning, both as participants and as hired contractors for the capital works / natural heritage restoration element. They have had extensive restoration works on the holding through the project with **717m of ditches being recast, and several mature willows being pollarded.**

In addition to the core project activities, the family were involved in the development and exploration of potential **Payment for Ecosystem Services (PES)** schemes on the Levels. This involvement included many independent conversations, along with participation in the public goods workshops, which identified priorities for the landscape within the context of PES schemes and barriers to successful implementation. They have also helped to build an important picture of the economics of farming on the Levels; identifying challenges, discussing how to economise efforts, and highlighting where conflicts between land management and farming operations lie. They have further provided valuable insights into real-life financial figures, enabling a more accurate assessment of economics on the Levels.



While the partners made essential contributions to the project, as contractors and through their on- and off-farm actions and discussions, they did comment that “The works carried out on our farm are of no benefit to our business: we allowed the work as it was 100% funded and it did not interfere with production from the fields.”

Mead Farm

Activities undertaken: Pollards; Orchard; Nest Boxes; Nutrient Management Plan; Water Quality Assessment; Pollinator Survey

An intensively farmed dairy enterprise, Mead Farm is a c.200 acre (80 ha.) holding in Redwick on the Caldicot Levels, one of the highest points on the Gwent Levels. The farmer is a relative newcomer to the area, having to quickly learn the nuances of farming this particular landscape. His aim is to produce dairy products on-site and sell directly to consumers.

As the farm business is based upon productivity, the farmer has made good use of the assessments offered by the project, for example, the **Nutrient Management Plan** has helped to provide a fuller picture of how to achieve marginal gains. The **Water Quality Assessment** highlighted a number of areas where upgrades could be made to improve water quality around the holding, and these have been acted upon. Some of these improvements have involved considerable work, such as fitting a 2,000-litre water catchment system to catch rainwater for use by the livestock, thereby reducing run-off and the potential for it to mix with slurry and other contaminated water

Given the productive orientation of the current business and the farm's recent history, it was not expected that a **pollinator survey** would uncover much of interest. This was, indeed, the case, but the agreement of the farmer to undertake a trial herbal ley and his use of the mob grazing method mean that the results are likely to be particularly striking. Early indications are that the ley is establishing well, and the cattle seem to enjoy it at least as much as the commercial rye grass pasture. Other early success has been noted with the very good take up of Barn Owl **nest boxes**.

The farm's **orchard** has been expanded with new planting, and work undertaken to bring back some older trees into better health and production. As well as providing an improved habitat for biodiversity, and specifically pollinators, it is hoped that this will eventually help to provide an additional income for the holding.



Recommendations

The Sustaining the Gwent Levels Sustainable Management Scheme was well received and supported by the participating farmers. A number of lessons for future schemes that wish to encourage environmental improvements delivered by farming and land management may be drawn from the case studies. They show that the farmers were engaged, sympathetic to the needs of the natural environment and very aware of their place within a landscape that is unique in Wales. They were keen to accept the opportunities on offer, but some specific features of the project also helped with its uptake, including the presence of a pro-active project officer.

Recommendations for building on the Sustaining the Gwent Levels project and developing nature-friendly agricultural schemes are:

- Make the scheme's activities **easily accessible** to potential participants. The take up of agri-environmental schemes (notably Glastir) is reported to be low in the Gwent Levels, but there was demonstrable interest in the Sustaining the Gwent Levels project. Accessibility does not simply mean that the project is available, but is easy to engage with without adding to the administrative burden that farmers already face.
- Consideration of the **financial and time costs** to the farmers is vital. While some farmers – including a number of those already seeking to prioritise the improvement of biodiversity on their farms – are able to fund these types of activities to a certain extent, many more need help to do so. These include those who perhaps need further convincing of the benefit of specific actions and others who could and would like to achieve more given appropriate assistance.
- **Local knowledge** to design and deliver the project has an important role. It helps the project build on relevant priorities, suitable land management techniques (which may be locally specific), a sense of identity, and project ownership and therefore engagement. It also helps to keep the economic benefits of, for example, sub-contracting within the local community, which further assists with engagement.
- The importance of a credible, energetic **local project officer**, able to communicate appropriately and offer relevant assistance, cannot be overstated.
- Farms should be encouraged to work towards **Maximum Sustainable Output (MSO)** by minimising or eliminating their corrective variable costs (CVCs). This will benefit profitability and has the bonus of being the point at which environmental benefits are also maximised. Implementing these business and economic recommendations will almost invariably produce a need for **mentoring support** at farm level.
- Potential **markets** for any additional products resulting from the project should be investigated. For example, while several farmers were happy to forego land for orchard planting through a mix of a sense of tradition and a desire to provide an additional habitat for wildlife, they also often hope that the produce will eventually provide an additional income stream.

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