Programme of work for semi-natural grasslands in Wales

Report No: 608

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- â gweledigaeth a chyfeiriad clir ar gyfer yr hyn sydd ei angen i wneud glaswelltiroedd lled-naturiol yn wytnach;
- yn teilwra cynlluniau unigol ar gyfer pob safle ac yn darparu hyblygrwydd o ran rheolaeth;
- yn gweithredu ar sail fferm gyfan;
- wedi meithrin perthnasoedd adeiladol, llawn ymddiriedaeth a hirdymor gyda ffermwyr;
- yn darparu cefnogaeth ar gyfer newidiadau mewn systemau ffermio;
- yn grymuso ffermwyr i wneud y penderfyniadau ynghylch rheoli tir;
- yn gweithio gyda busnes y fferm gan gynnwys y dull 'llai yn fwy' (gweler 3.2); (h.y., gall mathau llai dwys o ffermio fod yn fwy proffidiol).
- yn ymgysylltu â pherchnogion tir a chefnogwyr;
- yn ychwanegu gwerth at gynnyrch fferm;
- yn cael eu cefnogi gan rwydwaith da o berchnogion tir a ffermwyr.
- â staff gwybodus yn eu lle ers blynyddoedd lawer i gefnogi'r prosiect a meithrin perthnasoedd da gyda ffermwyr

Mae'r adolygiad hefyd wedi tynnu sylw at yr hyn nad yw wedi gweithio'n dda. Mae angen mynd i'r afael â'r pedwar mater canlynol mewn prosiectau a dulliau gweithredu yn y dyfodol:

- natur tymor byr prosiectau sy'n colli cyllid ac arbenigedd;
- graddfa gyfyngedig y ddarpariaeth a'r effaith ar gysylltedd a gwydnwch;
- diffyg gwybodaeth am reolaeth a chyflwr y safle;
- mynd i'r afael â chyflwr safleoedd ar wahân i'r system ffermio – arbed tir yn hytrach na rhannu tir (h.y. canolbwyntio ar y glaswelltir llawn rhywogaethau, heb edrych ar y fferm ehangach)

Daw'r adolygiad i'r casgliad bod angen chwe phrif 'elfen' o waith i greu prosiect/dull llwyddiannus o sicrhau gwytnwch glaswelltir lled-naturiol yng Nghymru.

1. Mae angen gweledigaeth glir o sut beth yw tirweddau glaswelltir lled-naturiol gwydn mewn ardal benodol.

2. Mae angen i'r cysylltiad rhwng gwytnwch glaswelltir lled-naturiol a busnes y fferm fod wrth wraidd y dull gweithredu.

3. Bydd sefydlu a chefnogi rhwydweithiau ffermwyr/perchnogion tir wedi'u hwyluso yn allweddol i gyflawni newid.

4. Mae angen canolbwyntio ar newid canfyddiadau am werth glaswelltiroedd lled-naturiol.

Mae'r dadansoddiad gofodol o laswelltiroedd lled-naturiol a rhwydweithiau ecolegol glaswelltir yn rhoi gwybodaeth ddiddorol am sut gellid canolbwyntio adnoddau i ddechrau er mwyn gwella gwydnwch. Drwy gyfuno'r setiau data gofodol ag ardaloedd o brosiectau presennol a diweddar sydd wedi ymgysylltu â ffermwyr, mae rhestr dros dro o feysydd blaenoriaeth ar gyfer treialu dull newydd wedi'i llunio yn yr adroddiad hwn.

Mae angen i'r dull gweithredu, o'r weledigaeth i waith ymarferol, gael ei gefnogi gan gynllun amaeth-amgylcheddol effeithiol, a'i leoli yng nghyd-destun y cynllun hwnnw. Ar gyfer ffermydd gall hyn ddarparu rhywfaint o sicrwydd, parhad a hirhoedledd, ac mae angen pob un ohonynt i gefnogi newid cadarnhaol mewn systemau ffermio. Mae'n hanfodol cael adnoddau i weithredu cynlluniau yng Nghymru gyda thimau o swyddogion lleol profiadol, gwybodus sy'n cael eu cefnogi yn dda.

Mae'r adolygiad yn tynnu sylw at ddau brif ddull a allai fod yn sail ar gyfer darparu gwytnwch glaswelltir lled-naturiol yn llwyddiannus yng Nghymru: y dull Ffermio ar gyfer Cadwraeth, dull talu am ganlyniadau ar y Burren; a dull gweithredu Prosiect Glaswelltiroedd Caint ar raddfa tirwedd. Mae'r ddau wedi'u cyllido'n bennaf gan gynlluniau amaeth-amgylcheddol ac mae'r ddau ddull wedi cael eu harwain gan gynghorwyr profiadol sy'n gweithio ers blynyddoedd lawer gyda'r gymuned ffermio.

Gyda naw deg un y cant o'r glaswelltiroedd lled-naturiol yng Nghymru ar ddaliadau amaethyddol, mae'r gymuned ffermio yn allweddol i wella gwytnwch yr adnodd hwn. Mae'r dystiolaeth yn yr adroddiad hwn wedi dangos nad yw prosiectau tymor byr yn cyflawni canlyniadau hirdymor ar gyfer glaswelltiroedd. Mae arnom angen newid patrwm o ganolbwyntio ar brosiectau tymor byr i ymgysylltu a chefnogaeth hirdymor. Mae'r newid hwn yn gofyn am gamau gweithredu strategol, rhanbarthol a lleol cydlynol sy'n dod â'r gymuned ffermio i mewn fel partner allweddol wrth gefnogi a chyflawni arferion rheoli cynaliadwy hirdymor ar dir amaethyddol.

Executive summary

A range of approaches and projects from Wales, England and Ireland form the basis of this review. Further insights were gained from discussions with people from a number of organisations: projects leads and those with experience of different approaches over many years. In summary, the review suggests that there are ten key things that have worked well and the most successful projects and approaches are those that:

- have a clear vision and steer for what is needed to make semi-natural grasslands more resilient;
- tailor individual plans for each site and provide flexibility in management;
- take a whole farm approach;
- have built trusting, constructive and long-term relationships with farmers;
- provide support for changes in farming systems;
- empower farmers to make the decisions about land management;
- work with the farm business including the 'less is more' approach (see 3.2); (i.e., less intensive forms of farming can be more profitable).
- engage with landowners and supporters;
- add value to farm produce;
- are supported by a good network of landowners and farmers.
- Have knowledgeable staff in place for many years to support the project and build good relationships with farmers

The review has also highlighted what has not worked well. The following four issues need to be addressed in future projects and approaches:

- the short-term nature of projects with loss of both funding and expertise;
- the limited scale of delivery and impact on connectivity and resilience;
- the lack of information on site management and condition;
- addressing site condition in isolation from the farming system – land sparing rather than land sharing. (i.e., focusing on the species rich grassland, without looking at the wider farm)

The review concludes that there are six main 'strands' of work that are needed to create a successful project/approach to delivering semi-natural grassland resilience in Wales.

1. There needs to be a clear vision of what resilient semi-natural grassland landscapes look like in a given area.
2. The link between semi-natural grassland resilience and the farm business needs to be at the core of the approach.
3. Key to achieving change will be the establishment and support of facilitated farmer/landowner networks.
4. There needs to be a focus on a change in perceptions of the value of semi-natural grasslands.

5. Good relationships and constructive ways of working need to be at the heart of any approach; successful delivery is as much about people as it is about grasslands.
6. A simple and pragmatic approach to monitoring needs to be developed and incorporated into all projects and approaches to ensure that change can be tracked and that results can be shared and used to inspire.

The spatial analysis of semi-natural grasslands and grassland ecological networks provides interesting insights into how resources could initially be focused to improve resilience. By combining the spatial datasets with areas of existing and recent projects which have engaged farmers, a provisional list of priority areas for trialling a new approach has been drawn up in this report.

The approach, from the vision to practical work, needs to be supported by, and in the context of, an effective agri-environment scheme. For farms this can provide a degree of security, continuity and longevity, all of which are needed to support positive change of farming systems. Resourcing the running of schemes in Wales with experienced, knowledgeable and well supported local teams of officers is essential.

The review points to two main approaches that could form the basis for successful delivery of semi-natural grassland resilience in Wales; the Farming for Conservation, payment for results approach on the Burren; and the landscape scale approach of the Kent Grasslands Project. Both have largely been funded by agri-environment schemes and both approaches have been led by experienced advisers working for many years with the farming community.

With ninety-one percent of semi-natural grasslands in Wales on agricultural holdings, the farming community is key to improving the resilience of this resource. Evidence within this report has shown that short-term projects do not deliver long-term outcomes for grasslands. We need a paradigm shift from the focus on short-term projects to long-term engagement and support. This shift requires coordinated strategic, regional and local actions that bring in the farming community as a key partner in supporting and delivering long term sustainable management practices on agricultural land.

1. Introduction

1.1 NRW Project Brief

As set out in the Environment (Wales) Act, NRW must pursue sustainable management of natural resources (SMNR) in relation to Wales, and apply the principles of SMNR. SMNR means: 'using natural resources in a way and at a rate that maintain and enhance the resilience of ecosystems and the benefits they provide and, in so doing, meet the needs of present generations of people without compromising the ability of future generations to meet their needs and contribute to the achievement of the well-being goals'.

Semi-natural grasslands, as defined in SoNaRR (2020), occupy about 9% of the land area of Wales and have declined by more than 90% during the latter part of the 20th century. Remaining areas of the habitat are often in poor condition, especially due to under-grazing. Semi-natural grassland is the most fragmented ecosystem in the Welsh lowlands (SoNaRR 2020).

This contract will form a key part of the development of a programme of work aimed at improving grassland resilience in Wales. It is expected that the programme will contribute in a significant way to addressing both the nature and climate change emergencies.

The contract will consider what is required to improve the resilience of semi-natural grassland ecosystems in Wales and work up an initial five-year costed delivery programme containing a range of options.

The work will consider various delivery and funding options, and consider the success or otherwise of past activities and projects aimed at improving grassland resilience.

1.2 Scope of Report

This report considers what is required to improve the resilience of semi-natural grassland ecosystems in Wales. It is focussed on lowland grasslands: neutral, calcareous (incl. upland), marshy and acid grasslands.

In Section 2 the report provides an overview of the current status of semi-natural grasslands in Wales, highlighting the importance, the threats and the priorities. Section 3 covers the review of current and past projects and approaches to grassland conservation and assesses how each has contributed to grassland resilience, focusing on what has worked well in terms of delivering grassland resilience. A brief review of recent agri-environment schemes in Wales is covered in Section 4. This leads into an assessment of what is required to improve grassland ecosystem resilience in Wales. Section 5 draws together the learning from the experiences of past and current projects and approaches, and identifies the areas of work that need to be developed to deliver semi-natural grassland resilience.

Section 6 considers the spatial distribution of semi-natural grasslands, grassland networks and the location of designated sites, and looks at the data on agricultural land holdings. Using the information available and the key findings from the review, recommendations are made on how spatial data might be used to target future initiatives.

Based on the review, a detailed costed programme for improving semi-natural grassland resilience in Wales is provided in the final section of this report: Section 7.

2. Current State of Semi-natural Grasslands in Wales

Semi-natural grasslands are characterised by mixtures of grasses and herbaceous plants, along with varied amounts of sedges, rushes, mosses and lichens. The priority grasslands, list under Section 7 of the Environment Act 2016, fall into five broad categories, developed in response to local climate, soil, hydrology, geology and management: acid, neutral, calcareous, marshy and, a very rare type, calaminarian grassland. Occurring in both the lowlands and uplands they are of particular importance for higher plants, fungi and invertebrates, including many species that until recently were more common and widespread. They also provide habitat for a range of mammals, birds and other vertebrates. For example, one third of higher plant Priority Species, 27 out of 82 taxa, occur predominantly or wholly in semi-natural grasslands and 11 of the top 20 richest sites for grassland fungi in the UK are in Wales. They are highly important for many butterfly species, including the threatened marsh fritillary butterfly and they are of key importance for many bumblebee species (SoNaRR 2020).

Semi-natural grasslands provide more ecosystem services than agriculturally improved grasslands, particularly those relating to biological diversity, crop pollination, carbon storage, pollution control, and cultural heritage. For example, semi-natural grasslands are of high importance for pollinators, with calcareous and neutral grasslands having among the highest nectar levels of all habitats. They are an important store of soil carbon, with much higher levels than cultivated or ploughed grassland. There is evidence that restored grasslands contain greater levels of soil carbon than restored woodland when whole soil profiles are considered. Restoration of species rich grasslands from abandoned grasslands can increase carbon sequestration.

Semi-natural grasslands can play an important role in catchment management with soils being more water retentive and less compacted, vegetation structure more varied and rooting structure more complex and deeper than in improved grasslands. They have a greater capacity to store water than intensively managed grassland, regulate flow and play an important role in flood prevention. Semi-natural grasslands form some of Wales's most iconic and valued landscapes, for example, the Great Orme's Head in North Wales and the Gower limestone coast in south Wales. Surveys show that people prefer areas with structural variation and an abundance of flowers over monotonous landscapes. Flower-rich meadows are particularly valued for their beauty and increasingly there is an appreciation of wildlife rich habitats, enabling people to connect with and enjoy nature. (SoNaRR 2020)

This report focuses on the following grassland types:

- Neutral grasslands, including lowland meadows
- Marshy grasslands, including purple moor grass and rush pastures
- Lowland and upland calcareous grasslands
- Acid and calaminarian grasslands

Figure 1. Grassland Types: Clockwise - Neutral Hay Meadow Berthlwyd, Brecon Beacons; Marshy Grassland Caerau Uchaf SSSI, Bala; Calcareous Grassland, Creuddyn SSSI, Conwy; Acid Grassland Corndon Hill, Montgomeryshire.

Source: H Buckingham, S Smith

Semi-natural grasslands occupy about 9% of the land area of Wales and have declined by more than 90% during the latter part of the 20th century. SoNaRR (2020) reports that the remaining semi-natural grasslands are estimated to occupy nearly 192,000 ha in Wales, circa 78,000 ha in the lowlands and circa 114,000 ha in the uplands. Recent assessments in Wales show continuing loss outside the protected site network (SoNaRR 2020).

The remaining areas of the habitat are often in poor condition, especially due to under-grazing. Recent monitoring of grassland SSSIs shows a pattern of mostly poor condition: 91, 72%, of 124 lowland semi-natural grassland SSSI features assessed, between 2004 and 2017, were in unfavourable condition. Undermanagement was the main cause, affecting 80% of features.

Semi-natural grassland is the most fragmented ecosystem in the Welsh lowlands. Remaining habitat patches are usually small, ranging from an average of 6.2 ha, acid grassland, to just 1.8 ha, neutral grassland, and are widely scattered within landscapes dominated by ‘improved grassland’ (SoNaRR 2020). However, some grassland landscapes with a high degree of connectivity can still be found in Wales, for example the limestone grasslands of the Creuddyn Peninsula in North Wales and the rhos pastures of south west Carmarthenshire.

Under the Environment (Wales) Act 2016, NRW and other public bodies are required to seek to maintain and enhance biodiversity and promote the resilience of ecosystems.

Ecosystem resilience is assessed using four attributes of diversity, extent, condition and connectivity. The current state of semi-natural grassland resilience is detailed in the SoNaRR report and summarised in the table below. A further factor, sustainability of management, which is key to the long-term resilience of semi-natural grasslands is considered in this report.

Table 1. Assessment of Resilience for Semi-Natural Grasslands. Source SoNaRR 2019.

Practical habitat unit	Diversity	Extent	Condition	Connectivity
Lowland semi-natural grassland Calcareous Neutral Marsh Acid Calaminarian	**Low** Naturally very high diversity and important for a wide range of flora and fauna. Loss of diversity due to huge decline in the habitat extent in the last half of the 20th century, as well as current poor condition and connectivity. Large number of grassland species under threat.	**Low** >90% loss in the last half of the 20th century. Losses continue. Main issues are agricultural intensification and undermanagement. Protected sites appear largely protected from loss, but 90% of grassland Priority Habitat is not on protected sites.	**Low** Generally poor on both protected and unprotected sites, due largely to undermanagement, combined with factors such as atmospheric deposition. Some evidence suggests trend in condition has stabilised.	**Low** The least well connected of all main habitat groupings. Surveys in 1980s/90s revealed very high fragmentation which is highly likely to be still worsening due to continued losses in extent. Less mobile species severely affected. Several better-connected landscapes remain locally.

In summary the main causes of low resilience of semi-natural grasslands in Wales are:

- **Agricultural intensification** - Intensive farming is the main cause of loss, fragmentation and poor condition of lowland semi-natural grassland. Nutrient enrichment from fertilisers, re-seeding, over-grazing and drainage has profoundly changed the nature and character of the grasslands across Wales. These changes have particularly impacted on neutral grasslands, and between 1930 and 1984 there was a 97% loss of flower rich lowland grassland in Britain (Fuller 1987, Jefferson 2012). Intensive farming practices are still resulting in loss of lowland semi-natural grassland in Wales with decline in grassland diversity and condition, and fragmentation of the habitat (SoNaRR 2020).

- **Grassland abandonment or undermanagement** has led to the decline in quality and diversity of extensive areas of semi-natural grassland. This has affected all types of lowland grassland but impacts have been more widespread on acid, calcareous and marshy grasslands. It is particularly acute in areas where farming systems have become focussed on high production. Here marginal land is seen as difficult and time consuming and of little value for grazing, leading to abandonment. A focus on production has also led to a decline in traditional hardy breeds of stock. This has contributed to the abandonment and a perception of the low value of semi-natural

habitats, a loss of connection with the nature-rich parts of the farm and loss of knowledge as to how to farm these areas. There are, however, many examples of farms that continue to work with semi-natural grasslands, raising quality livestock, and there have been a number of successful projects that have re-established viable grazing systems. For example, on the coastal habitats in **Anglesey (Anglesey Grazing Animals Partnership**, Case Study 1, Appendix I) and the rhos pastures in Carmarthenshire (**Caeau Mynydd Mawr Project**, Case Study 3, Appendix I).

- **Poor ecological connectivity between semi-natural grasslands** – Generally there is poor connectivity between grasslands, and neutral grasslands in particular tend to sit in isolation, surviving only as small patches within a sea of agriculturally improved land. Poor connectivity needs to be addressed to enable the grasslands and the species they support to thrive in a network of rich habitat across the landscape. Not only will such an approach deliver greater resilience for semi-natural grasslands, it will enable the grasslands to play their crucial role in delivering a range of ecosystem services. To date, the examples of improving connectivity of semi-natural grasslands in Wales tend to be at a local scale, such as on the Llŷn Peninsula (**Llŷn Landscape Partnership**, Case Study 8, Appendix I). However, projects such as the **Kent Downs Grassland** (Case Study 7, Appendix I) and the **Burren Farming for Conservation Programme** (Case Study 2, Appendix I) have shown that it is possible to significantly improve connectivity.

- **Land-use change** - Increasing land-use pressures from, for example, woodland creation, growing of bioenergy crops and expansion of the built environment can have an adverse impact on networks of semi-natural grassland. The loss of grasslands to development has been tackled locally. For example, in Carmarthenshire the pressures on land for development was leading to a loss of marshy grasslands, the habitat of the threatened marsh fritillary butterfly. By applying a development levy to fund the project Caeau Mynydd Mawr, habitat loss has been limited and habitat condition across a number of sites has been improved (Case Study 3, Appendix I). There is an increasing threat to semi-natural grasslands from the understandable desire to increase the cover of woodland in Wales. This issue needs tackling at a strategic and local level to ensure that the expansion of woodlands is in the context of ecologically diverse networks. Key to this is changing perceptions about the value of grasslands and improving understanding of their significant role in, for example, the storage of carbon.

- **Climate change and air pollution** – Changes in climate will undoubtedly lead to changes in grassland communities and will continue to pose management challenges, such as increased fire risk. However, with the exception of marshy grasslands, more than any other habitat, semi-natural grasslands are more resistant to drought. There will be changes and loss of some species but most importantly, semi-natural grasslands are likely to be far more resilient to climate change than short term grassland leys. If networks are re-built and semi-natural grasslands thrive at scale, they will play an important part in mitigating some of the impacts of climate change by, for example, storing more carbon and regulating water flows, thus helping to prevent flooding. Semi-natural grasslands are also affected by atmospheric pollution, with nitrogen oxides and ammonia increasing soil nutrient levels and causing acidification of grassland.

- **Insufficient protection and management of important sites** – Though 27% of semi-natural grasslands in Wales are part of a protected site (Sites of Special Scientific Interest, SSSIs and Special Areas of Conservation, SACs) many are not being well managed, leading to poor condition. 21% of the protected site grasslands are covered by SSSI management agreements and in places this has worked well to support good management to farmers and landowners. Often there is poor connectivity between protected sites, particularly the neutral grasslands. This ecological isolation makes the sites and the species they support increasingly vulnerable.

The causes of low resilience of semi-natural grassland are compounded by a **general lack of appreciation of the value of semi-natural grassland for both a resilient farm business and a wide range of other ecosystem services**. Although, for example, Plantlife led projects **Coronation Meadows** and **Magnificent Meadows** (Case Studies 4 & 10, Appendix I), have made great strides in raising awareness and improving understanding amongst public and politicians, there is still a problem of perception amongst the farming community and some NGOs. If semi-natural grassland resilience is to be achieved in Wales the issue of perception needs to be tackled.

The tables below provide a summary of the resilience of the different grassland types.

Table 2. Summary of Resilience – Neutral Grassland and Lowland Meadows

Resilience Positives	Some very species-rich examples. Meadows have been the focus of a number of initiatives although these have had limited long-term impact.
Resilience Negatives	Neutral grasslands tend to be small and highly fragmented. Poor condition of pasture due to inappropriate grazing. Much of the pasture land is sheep-grazed. Grazing is typically fairly heavy and year-round. Lack of flowering, soil compaction and spread of agricultural weeds such as thistle, docks and nettles are potential issues. Lack of grazing on pasture is also an issue, more typically associated with isolated and fragmented sites. This leads to bracken invasion, and reversion to scrub and woodland. Poor condition of meadows due to a decline in traditional hay meadow management, particularly liming and light manuring. Hay meadows are frequently shut-off too late in the spring and cut too early resulting in a decline in species diversity. Even adherence to the Glastir dates can dates can detrimentally affect certain species which either start to grow before the shut-off date or which typically shed seed later than the cutting date. Slow decline of pasture as a result of NPK fertilizer use and/or nutrient transfer by livestock. Species-rich meadows are rarely valued as part of high input farming systems. Scrub invasion on pasture land.

Management Focus	Re-instating hay/haylage as part of the farm system. Re-establishing traditional hay meadow management. Changing grazing patterns on heavily sheep-grazed pasture e.g., looking at pulse grazing or rotational grazing. Re-establishing appropriate grazing on under-grazed sites, including the use of cattle and/or ponies to control scrub and rank vegetation. Seeking opportunities to buffer and connect isolated sites. Semi-improved neutral grassland provides the best opportunity to restore species-rich vegetation. Introduction of new grazing systems such as rotational grazing can be help promote species-richness and integrate these grasslands into the farming system. New hay meadows can be established on fairly improved land, although nutrient stripping through cropping and harvesting with barley or similar may then be needed to reduce nutrient levels.

Table 3. Summary of Resilience – Marshy Grassland and Rush Pasture

Resilience Positives	In parts of West Wales such as Carmarthenshire, Pembrokeshire and Ceredigion sites tend to be extensive and relatively well connected. Marshy grasslands are also well connected in ffridd areas particularly in south Wales. Projects, e.g., Caeau Mynydd Mawr, have helped improve the condition to provide a network of sites to support marsh fritillary populations.
Resilience Negatives	Sites are small and fragmented in most other parts of Wales. Many sites are in poor condition primarily due to undergrazing or sheep-only grazing. This can result in the development of a thick litter layer suppressing sward diversity and the spread of willow and other scrub. Many small sites (corners of fields) are being slowly improved either by nutrient transfer or direct fertilizer application. Changes to hydrology due to field drainage and local changes to water courses e.g., through infrastructure development. Species such as marsh fritillary impacted by fragmentation and poor condition.
Management Focus	Scrub management. Restoration management of very degraded sites, for example repeated cut/collect of *Molinia* and rush and removal of litter on very graminoid-dominated sites. Promotion of cattle or pony grazing to manage rank vegetation and scrub and to enhance species diversity. Removal of sheep, even temporarily, where cattle or pony grazing has been established will benefit sward diversity. Seeking opportunities to buffer and connect isolated sites. Rush infested improved pasture can offer opportunities for rewetting through removal of field drains and ditches. Restoring semi-natural dry grassland to buffer isolated wet grassland will also be beneficial.

Table 4. Summary of Resilience – Lowland and Upland Calcareous Grassland

Resilience Positives	Good network of species-rich sites linked to outcropping Carboniferous Limestone e.g., the limestone escarpments of north east Wales. Some larger sites support sizable mosaics of calcareous grassland, species-rich neutral and acid grassland and other habitats, such as limestone heath.
Resilience Negatives	Grassland in the lowlands, particularly species-rich examples, tend to be small and fragmented. Many sites are in poor condition due to inappropriate grazing. Much of the upland calcareous grassland is sheep-grazed. Grazing is typically fairly heavy and year-round. Lack of flowering, soil compaction and spread of grazing tolerant species are potential issues. Lack of grazing is also an issue, more typically associated with lowland sites. This sometimes leads to bracken invasion, and more frequently invasion by scrub and secondary woodland. Slow decline of grasslands due to NPK fertilizer use and/or nutrient transfer by livestock. Non-native cotoneaster is a significant issue particularly in North East Wales but also on coastal sites in North and South Wales.
Management Focus	Scrub and bracken management. Changing grazing patterns on heavily sheep-grazed pasture e.g., looking at pulse grazing or rotational grazing. Re-establishing appropriate grazing on under-grazed sites including the use of cattle and/or ponies to control scrub and rank vegetation. Seeking opportunities to buffer and connect isolated sites. Semi-improved calcareous grassland provides the best opportunity to restore species-rich vegetation. Eradication of INNS, particularly Non-native cotoneaster.

Table 5. Summary of Resilience – Acid Grassland

Resilience Positives	Fairly large areas with good connectivity on the upland fringe.
Resilience Negatives	Grassland in the lowlands, particularly species-rich examples, tend to be small and fragmented. Many sites in poor condition due to inappropriate grazing. Much of the acid grassland is sheep-grazed particularly in the upland fringe. Grazing is typically fairly heavy and year-round. Lack of flowering, soils compaction and spread of grazing tolerant species are potential issues Lack of grazing is also an issue, more typically associated with lowland sites but sometimes in the upland fringe. This leads to bracken invasion, and change to scrub and woodland. Slow decline of pasture diversity as a result of NPK fertilizer use and/or nutrient transfer by livestock. Rhododendron invasion is a significant issue on the upland fringe in Snowdonia.
Management Focus	Scrub and bracken management. Changing grazing patterns on heavily sheep-grazed pasture e.g., looking at pulse grazing or rotational grazing. Re-establishing appropriate grazing on under-grazed sites, including the use of cattle and/or ponies to control scrub and rank vegetation. Seeking opportunities to buffer and connect isolated sites. Semi-improved acid grassland is relatively widespread and provides an opportunity for restoration. Eradications of INNS particularly rhododendron.

3. Review of Grassland Projects and Approaches

3.1 Summary

A range of approaches and projects from Wales, England and Ireland form the basis of this review. The assessments have been made largely using project reports and website information. Further insights were gained from discussions with a wide range of people, including those that are leading on projects and others that have experienced the impacts of the different approaches over many years. Twelve case studies were compiled, detailing various projects and approaches; these are provided in Appendix I. Eight of these drew on the work of Sutton and Swann (2019) but were expanded on following further discussions with the key individuals.

In summary, the review suggests that there are ten key things that have worked well in the delivery of the various projects and approaches. The most successful projects and approaches are those that:

- have a clear vision and steer for what is needed to make semi-natural grasslands more resilient;
- tailor individual plans for each site and provide flexibility in management;
- take a whole farm approach;
- have built trusting and constructive relationships with farmers;
- provide support for changes in farming systems;
- empower farmers to make the decisions about land management;
- work with the farm business including the ‘less is more’ approach (see 3.2);
- engage with landowners and supporters;
- add value to produce;
- are supported by a good network of landowners and farmers.

The review has also highlighted what has not worked well. The following four issues need to be addressed in future projects and approaches:

- the short-term nature of projects with loss of both funding and expertise;
- the limited scale of delivery and impact on connectivity and resilience;
- the lack of information on site management and condition;
- addressing site condition in isolation from the farming system – land sparing rather than land sharing (the concept of managing conservation land separately from agricultural land (Green et al 2005).

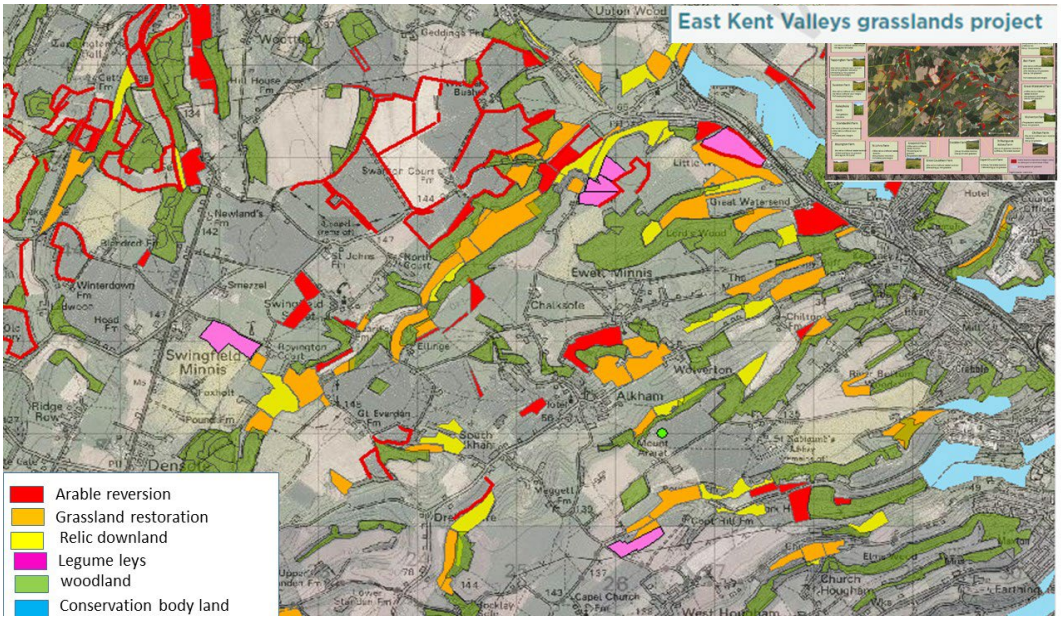
3.2 What Works Well?

- **Projects/approaches where there is a clear vision and steer for what is needed to make semi-natural grasslands more resilient**

In terms of achieving resilience, projects need to be clear about what is needed, and to date many of the smaller projects have understandably focussed on improving condition of

individual sites. Whilst such projects have been important locally, they haven't been able to work at the scale needed to achieve resilience across the landscape. One project that is achieving semi-natural grassland resilience is the **Kent Downs Grassland Project** (Case Study 7, Appendix I). Established in 1999 it has focused on the creation of landscape-scale networks of wildflower-rich grasslands, building flower and seed abundance at scale (Tuson, 2019). Within the 4 project areas, each 50 to 80 km^2in size, it set out to create species rich grasslands in a farmed landscape, creating and restoring (to date) over 1300 ha of grassland. Part of the success is attributed to having a clear overview as to what a resilient grassland network would look like across the landscape (Figure 1). This included the types of grassland, the locations and the proximity of grasslands over large areas of farmland. Having an oversight of what is needed, where and how all of the pieces of the grassland jigsaw fit together, is seen as essential if a confident steer is to be provided to landowners. Whilst the Kent project recognised that decisions at a farm level needed to be farmer led to ensure that there was ownership and commitment to the work, this needed to sit within a clear ecological vision. The overall vision provides the steer, ensuring that the changes have resulted in a resilient network of grasslands within a functioning farmed landscape.

Figure 2. Example from the Kent Downs Grasslands Project, Showing the Re-Building of Habitat Networks Across the Landscapes. Source Dan Tutson Natural England 2019



- **Projects/approaches that tailor individual plans for each site and provide flexibility in management**

Site specific plans, with individually tailored approaches to address grassland condition, have worked well in a number of projects. The approach recognises the complexity and individual nature of habitats and so rather than trying to deliver through a 'one size fits all' prescriptive approach it has invested in the resources to provide well thought out plans.

The **Anglesey Grazing the Grazing Animals Partnership** (AGAP), which ran from 2008 to 2014, worked with farmers on 28 sites, covering 843 ha, and produced individual plans for each site. The project spanned all aspects of conservation grazing to improve the condition of habitats. It offered funding for capital works, advice on livestock and grazing regimes and a livestock leasing scheme. Working with the farmers/landowners, site-

specific grazing plans were drawn up for each site. The time spent to draw up the plans built up relationships and the approach was well received by the farmers (Case Study 1, Appendix I).

Figure 3. Highland Cattle Grazing AGAP. Source PONT

The Caeau Mynydd Mawr Marsh Fritillary Project in Carmarthenshire puts part of its success down to its site specific, flexible approach. The marshy grasslands in the area, the habitat of the threatened marsh fritillary butterfly, were under threat from both abandonment and development pressure. Recognising these issues, the Council put in place Supplementary Planning Guidance (SPG), to protect and enhance existing and potential marsh fritillary habitat. This defined 5600 ha to the west of Ammanford within which any development would be required to take account of the needs of the butterfly. Developers have to enter Section 106 agreements with the Council and a financial levy is applied to all developments. The financial levy is then used to fund the Project Officer, capital works and the management agreements. The Project Officer works with each landowner to draw up plans to re-introduce grazing and facilitates the capital works and grazing arrangements to improve the condition of sites. Over the past 7 years it has successfully restored 130 ha of marshy grasslands. This flexible approach has built up constructive relationships with a range of different landowners and enabled the restoration of some key sites (Case Study 3, Appendix I).

The **Kent Downs Grassland Project** also puts part of the success down to having a ‘no one size fits all’ approach. Each of the agreements with farmers have been carefully drawn up based on in-depth knowledge of the farm. Once agreements are in place to carry out the work of creating and restoring grasslands, a flexible and pragmatic approach is taken from year to year to keep farmers on board and address management issues. Keeping sight of the whole and accepting some temporary, less than perfect management, is seen as an important part of the long-term success of the project (Case Study 7, Appendix I).

The **Gwarchod y Parc** approach in Pembrokeshire (Case Study 10) has a flexible “Toolkit” which allows the management activities which are most appropriate to the site to be selected.

Tailoring of plans to specific sites and farms helps to foster good working relationships with farmers and develop the best possible outcomes ecologically. If applied at scale, as in the Kent Project, it could help deliver real resilience gains for semi-natural grasslands.

- **Projects/approaches that take a whole farm approach**

(Examples here focus on the benefits to creating resilient network, rather than farm business – see below).

An issue with many projects is their short-term nature and, where efforts have focussed on individual sites, there is evidence that once the project funding ends sites can again become poorly manged or neglected.; for example, some of the sites in the **Anglesey Grazing Animals Project** and some of the flower rich grasslands of the **Saving our Magnificent Meadows Project** (pers comm Plantlife and PONT). However, it is felt that one thing that helps to achieve long term changes, is the whole farm approach. Such an approach recognises that for long term sustainable change, the grasslands ideally need to be part of the farming system and valued as part of the farm business. For whole farm plans to work well there needs to be a good and trusting relationship between advisers (ecological and farm business) and farmers. The approach can empower farmers to take ownership and pride in their semi-natural grasslands.

For example, the successful approach of the **Kent Downs Grassland Project** was based on whole farm Agri-Environment Scheme (AES) agreements. By looking at the whole farm and its potential to contribute to a landscape scale network of semi-natural grasslands it enabled the project to build up a resilient network farm by farm. A whole farm approach here also ensured that there was greater understanding of each farming system, enabling agreements to be tailor-made and provide flexibility in terms of delivery.

In Shropshire, as part of the **Stepping Stones Project**, a DEFRA Environmental Land Management (ELM) test and trial was set up in 2019 to trial the whole farm planning approach (Case Study 12, Appendix I). A group of farmers, **Upper Onny Farmers Group** (UOFG), worked with a facilitator and an environmental and farm business adviser to draw whole farm plans and provide workshops and demonstration events. These focussed on building greater understanding of, for example, natural capital and how this could be integrated into the farm business. The trial has concluded that Wildlife Friendly Produce (WFP) is a solid way of preparing for future AES plans, based on a shared understanding of the farm business and environmental priorities. It is of course too early to see how the WFP approach in this example can deliver greater resilience of grasslands across the landscape, but it is encouraging that the work of the UOFG has also generated an interest in creation of flower rich grasslands. Three farmers in the group have made a successful bid for funding and 21 ha of flower rich grassland were created in 2021.

A whole farm approach could be key to achieving resilience of semi-natural grasslands in Wales since to be resilient, the treasured sites with existing grasslands need to sit within a rich network of habitats across a farm and beyond to the wider landscape.

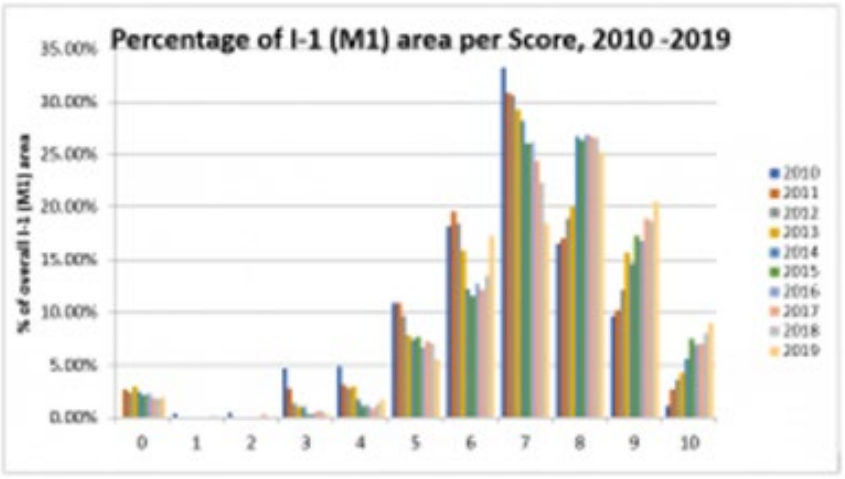
- **Projects/approaches that reward results/outcomes approaches**

Moving away from prescriptive agreements with farmers to agreements where positive outcomes are rewarded, has proved very successful in delivering grassland resilience. The results of this approach, developed over the last 20 years, on the Burren, Ireland, is impressive. The Burren area is a pastoral landscape of 720 km2, dominated by rich semi-natural habitats including extensive areas of limestone grassland and heath. 50% of the area is designated as SAC but despite the designation, many areas of habitat were

deteriorating. The two main issues to address were under-grazing and abandonment, and the intensification of farming systems, with a move towards in-bye land being dominated by improved grasslands. There had been a loss of the balance between nature and farming (Case Study 2, Appendix I).

The **Burren Farming for Conservation Programme (BFCP)** was founded in 2010 and it set up a trial to pay farmers for results. This made conservation a product by rewarding better management with higher payments, incentivising sustainable grazing and supporting nature friendly farming across a vast area of land**.** A comprehensive system of scoring both the lowland fields and the Burren Winterage was developed. This takes into account current management and existing and potential problems. One of the key advantages of the BFCP approach is that there is a clear value to the farmers of good condition habitats. Paying for results provides 'the carrot, not the stick approach' and financial incentives and support for the farmers. The positive impacts of the scheme were proven by a simple monitoring approach, showing an increase in high scoring land of about 25% over a 5-year period (figure 2). The scheme has now expanded to cover 331 farms, 23,000 ha of land.

Figure 4. Changing Habitat Score 2010-2019. Source Burren Programme Brendan Dunford



The graph above demonstrates that the average score from the subset of 147 farms, from 2010 to 2019, shows an increase from 6.61 in 2010 to 7.43 in 2019. This increase can be seen in the shift in I-1 scores away from scores 3-7 and towards scores of 8-10.

Though much smaller in scale than the BFCP, a payments for results trial on the Llŷn Peninsula is also beginning to show how effective the approach can be in achieving grassland resilience. The Llŷn Landscape Partnership is made up of conservation organisations and farmers unions, and is managed by Gwynedd Council. The trial, which began in 2020, aims to deliver better outcomes for nature than current agri-environment models and to show that farms are more productive economically when they farm in a nature friendly way. The payments to farmers are based on measurable outcomes rather than on delivery of prescriptions, with the aim of empowering and motivating farmers to deliver more for nature on their farms. The focus of habitat work is to improve the condition of existing habitats, building on work of previous projects, restore and create new habitats and increase connectivity between habitats. The habitat outcomes and scoring system have been developed by the Llŷn Landscape Partnership, led by PONT (Pori Natur a

Threftadaeth). The payment system takes into account positive and negative indicator species and features related to each habitat. More positive species and features will result in a higher score and therefore a higher payment. Critically, as in the Burren, the farmers will decide the actions they undertake, learn from experience and have more control over the condition of their land and the resultant payment (Case Study 8, Appendix I).

The payments for outcomes approach requires knowledgeable advisers to build good relationships with farmers as well as carrying out the annual visits to score the land and this can be seen as resource heavy. In the Burren the ratio of adviser to farmers is 1 to 33. However, with lessons learnt from the development of the AES, it is felt they could double the number of farmers each adviser has by, for example, training and empowering farmers to carry out more of the scoring themselves in some of the years and by using technology to reduce the time needed for input of data and records (pers comm Brendan Dunford).

- **Projects/approaches that have built trusting and constructive relationships with farmers to achieve good management, restoration and creation of grasslands**

The review of projects has highlighted how important the relationship is between advisers/project officers and farmers and landowners. Trusting relationships often take time to develop and this can be a problem in the short time period of many projects. Being able to empower farmers as well as generate enthusiasm for change requires a multitude of skills. There needs to be an empathy, mutual respect and often a great deal of patience for long lasting change to be delivered.

The AGAP project sighted that having a project officer that was an experienced farmer really helped to build trust and deliver better management of the sites in the project. Similarly, **Caeau Mynydd Mawr project** has also benefitted from the project officer being from a farming background. However, there are examples of successful delivery, such as the **Llŷn Payments for Results Trial** and the **Kent Downs Grassland Project**, where the advisers are not farmers. In the Kent project, working with the farmers over a long period of time has allowed trusting relationships to develop alongside in-depth knowledge of the ecology and the farming system. The adviser here also emphasises the need for patience when pursuing a long-term vision at a landscape scale, accepting that things don't always work out immediately but with patience and flexibility further steps can eventually be made (pers comm Dan Tuson).

Relationships with project officers and advisers also benefit greatly from the discussions between farmers. Facilitated groups and events that bring farmers together allow further trust to be generated in the farmer community.

A key part of developing good relationships is providing regular feedback and providing time for good communication on site with farmers and landowners. Too often this has not been a key part of the project approach but there many examples where this is sighted as being very important. For example, the **Calonwen Pastures for Bees Project** was very successful in delivering better habitat for pollinators across six dairy farms in the Calonwen dairy cooperative (Calonwen website). Monitoring clearly showed higher numbers of bumblebees and other pollinators, and also greater numbers of pollinator species, in the uncut/un-grazed margins of herbal leys. Feedback of the data was very well received and sparked a sense of pride and positive competition between the farmers.

The development of whole farm plans as part of the agreement process also provides an opportunity for exchange of knowledge between advisers and farmers and can form the basis for a trusting relationship. This has been the experience amongst the farmers of the **Upper Onny Farmers Group in the Stepping Stones Project**. In part, this process sparked a small group of the farmers to look for funding to create flower rich grasslands on their farms; the good communication and shared understanding led to a positive change (Case Study 11, Appendix I). Often farmers are keen to know 'what good looks like' for semi-natural grasslands but too often conservation projects and conservation organisations haven't been able to invest enough time for good discussions and listening. Recent research by the Floodplain Meadows Partnership has highlighted the importance of owner attitudes to the long-term success of grassland restoration (Rothero E. 2020 and pers comm 2022). The research provides very useful insights into the key factors in long term success of grassland restoration. The team carried out a survey of 163 fields that had been restored during the past 30 years. The results showed that neither the restoration method nor the previous land use was found to affect restoration success in floodplain-meadow schemes. However, the category of ownership did influence the outcome, with schemes managed by private landowners being the most successful. The land managers attitude to the field and the care and diligence in the management were the most important factors. It is inferred from these interesting results that the more landowners are engaged with the restoration and the grasslands, the more successful the outcomes will be. An ability to understand the grasslands and be flexible in the management of this dynamic habitat is very important for long term success. Engagement of landowners and their empowerment to make the long-term decisions can flow from constructive relationships with advisers.

Though the importance of trusting relationships seems an obvious requirement to enable positive change, project officers are often limited in the time they can spend with farmers and landowners. Too often, projects have focussed on getting what is perceived to be the right management on a site without providing time to generate a sense of ownership and pride with the farmer or landowner.

- **Projects/approaches that provide support for changes in farming system, e.g., leasing or purchasing of livestock**

A number of projects have used livestock leasing and livestock purchasing as part of the approach to establishing grazing on sites. For example, the **Gwendraeth Grasslands Project in** Carmarthenshire, 2011 to 2013, delivered by a partnership of the Wildlife Trust of South and West Wales (WTSWW), National Botanic Garden of Wales (NBGW), the Grasslands Trust and Pori Natur a Threftadaeth (PONT), was set up to address the condition of marshy grasslands and wetlands. During the short lifespan of the project, it Improved the management of 6 sites, with 100ha of grassland. Livestock sourcing and leasing by PONT to farmers, enabling the re-introduction of grazing, was seen as a key part of the success of the project. Livestock are expensive and the initial investment required for stock purchase can be prohibitive for some farmers. Leasing of the stock can give the farmer confidence in how well the type of stock will do on the farm and encourage investment to be made in the future. The Gwendraeth Project found that good site management continued beyond the lifetime of the project where livestock had been leased to farmers (Case Study 6, Appendix I).

Another project that successfully invested in livestock leasing and purchasing was the **Coity Wallia Commons Biodiversity Enhancement Project**, 2010 to 2012 (PONT website). The primary aim of the project was to restore and reconnect 1,063 ha of priority habitats on Cefn Hirgoed and Mynydd y Gaer commons north of Bridgend. The cattle leasing scheme enabled the establishment of a new herd of Devon Red Ruby cattle on one of the farms. The herd is thriving and seen as a key part of the farm business, and they continue to effectively graze the common land, improving the condition of the habitats.

Figure 5. Ruby Red Cattle on Coity Wallia. Source PONT

- **Projects/approaches that empower farmers to make the decisions about land management**

There is much evidence that the approaches that work best are those where the farmers and landowners are empowered to make the decisions about management of the land, as opposed to a prescriptive 'top down' approach. For example, the successful approach of the **Burren Farming for Conservation Programme** has been farmer centred and farmer led; importantly it has given the farmers "freedom to farm". A group of farmers were involved in drawing up the details of one of the earlier AES and so that engendered a sense of ownership in the community. The current scheme presents to the farmer the current state of the land but then the farmer decides on management strategy and nominates actions. This approach is coupled with support and training for the farmers so that there is a good level of understanding as to what outcomes are needed. Each year, following on from the monitoring, an annual farm plan is then drawn up with the adviser.

The Llŷn Landscape Partnership Payments for Outcomes trial is taking a whole farm approach to deliver nature friendly farming. It recognises that if farmers are to lead the transformation in the perception, attitude and approach to semi-natural grasslands, they need the tools and support to make the appropriate changes in their farming practices. A key part of this is improving their ecological knowledge and plant identification skills.

Figure 6. Pictorial guidance developed for hay meadow monitoring on Llŷn. Source PONT

Assistance with this, for example in the form of pictorial guides, is being provided by the project and for monitoring progress, and the farmers have easy access to ecological support through the National Trust and PONT advisers. This includes twice yearly farm walks in summer and winter to assess progress ad discuss potential changes in management. As a result, the farmers in the trial are very engaged in the decision-making process and are empowered to make active changes in their farming system. They have provided very positive feedback in the attitudinal survey as they see this approach as more helpful and supportive than previous Agri-environment schemes. In particular they are clearer on what they are trying to deliver on the ground.

One of the current problems in Wales with addressing the condition of semi-natural grasslands is that farmers and landowners sometimes feel that the nature rich area is not their responsibility. This is often apparent with designated sites and approaches to conservation that have focussed on 'land sparing'. Empowering farmers and landowners to make changes in their farming system to benefit the environment will help to instil a greater sense of pride, ownership and responsibility for semi-natural grasslands.

Provision of ecological advice and guidance is critical to ensure that the farmers and landowners clearly understand the management requirements of habitats and species on their land. Easy access to support from an ecologist or advisor has been central to the success of both the Llŷn and Burren approaches. Without this level of support farmers will not have sufficient information or confidence to make the necessary changes.

- **Projects/approaches that work with the farm business including the 'less is more' approach**

Approaches that bring together both the farm business and environmental assessment can bring long term positive changes, empowering farmers to make choices. The ELMs test and trial with the **Upper Onny Farmers Group** in Shropshire has taken this twin tracked approach from the start of the project. The whole farm plans involve both an environmental and a business assessment. Having this base line knowledge and information means that any changes are well informed. It is early days of the UOFG but the approach is seen as a positive experience by the farmers and there are signs that this will assist in positive changes in land management.

One of the important approaches to improving resilience of semi-natural grasslands, farm by farm, is the **'less is more approach'**. The study of farm businesses by Chris Clark (famer and chair of Nature Friendly Farming Network (NFFN) England) and his colleagues at Nethergill Associates highlights the need for farms to review production costs, outputs, and the role of farm support schemes, and consider how their profitability could be linked to working with rather than against nature (Clark C and Scanlon B, 2019). The research has shown that farmers continuously working with high-input high-output systems often experience less profit or are unable to break even financially. In summary, there is a point at which productive variable costs (PVCs e.g., fuel, seed, fertiliser, animal feed, pesticides, contract labour) turn into added corrective variable costs (CVCs e.g., grass substitute feed, artificial fertilisers, vet medicine) showing that variable costs as a whole are non-linear. The point where PVC's turn into CVC's is shown as the Maximum Sustainable Output (MSO). Beyond MSO, additional inputs at high costs are needed to maintain production. The approach recommends that by working with the 'free issue' of nature, the farm business has its best opportunity of pursuing a profitable outcome. The report recommends that farmers need to learn to farm with nature and that natural productivity should only be increased to the maximum sustainable output (MSO) level. Beyond this, farmers will degrade the natural asset and reduce profitability as additional inputs are required. In the long term both nature and farming can benefit from this approach and ultimately both the farm and the nature it supports should be more resilient.

The Payments for Outcomes trial on the Llŷn Peninsula is investigating the economics of moving towards a nature friendly farming system. Nethergill Consulting are providing consultancy services to the project and advising the farmers in the trial.

A good example of the reality of the 'less is more' approach and how it can benefit semi-natural grassland resilience is seen at Hill Top Farm, Malham, Yorkshire. Here Neil Heseltine and his family farm Belted Galloway cattle and Swale Dale sheep. They took the decision to focus on the 'natural and sustainable farming route' 14 years ago because they saw it as a more profitable way of farming and one that is more sustainable, from an environmental and economic point of view. They recognise that this gives the farm much more resilience, sighting that they are more likely to be farming at Hill Top in 100 years' time if they work with nature. To get to the MSO, the so called 'sweet spot', 14 years ago they reduced the stock on the farm from 800 sheep to 190 and they introduced cattle which has now built up to a breeding herd of 30. The 445 ha farm is managed for wildlife and there are extensive areas of semi-natural grasslands which are thriving. Reduced stocking density has had a positive impact on the farm profits because the costs of production are so much less, turning their farm from a loss-making to a profit-making enterprise (NFFN website).

Figure 7. Belted Galloways Grazing the Cravern Limestone SAC. Source National Trust

If widely adopted, ‘less is more’ could make a significant contribution to semi-natural grassland resilience in Wales. The ideal approach would be for the low input system of farming to be coupled with programmes of grassland restoration and grazing systems that allow much greater flowering of plants and build-up of soil carbon, such as deferred grazing and rotational or mob grazing. If built up farm by farm across a landscape, the benefits to grassland diversity, extent and connectivity could be substantial.

- **Projects/approaches that engage with owners and supporters**

Several projects have run programmes of engagement, training and volunteering to raise awareness and improve understanding of grasslands. One of the most successful, in terms of its scale, was the **Saving Our Magnificent Meadows Project (SOMM).** Inspired by the success of the Coronations Meadows Project, Plantlife led the UK wide SOMM project from 2014 to 2017, funded by the Heritage Lottery Fund (£3m). The project vision was to reverse the fortunes of wildflower meadows, grasslands and wildlife through a step-change in the nation’s understanding and appreciation of wildflower meadows (Case Study 12, Appendix 1).

Figure 8. Enjoying meadows, Prior’s Meadow, Gower. Source PONT

The work focussed on nine areas of meadow and other grassland enhancement, creation and improvement in connectivity. A key part of the approach was to engage with communities to increase awareness and understanding of meadows and provide

opportunities for people all over the UK to visit, enjoy and celebrate meadows and grasslands heritage. It reached millions of people all over the UK, including many new audiences. National Meadows Day, which has continued beyond the lifetime of the project, has been a huge success, a national celebration that encourages people to enjoy meadows at their peak. The number of public events that it was able to run was impressive, with more than 125 events in 2017. The project also increased the accessibility of meadows and grasslands by, for example, creating new nature trails, producing information boards, leaflets, guides and films. The project had a positive impact on the understanding of grasslands across the UK and brought focus to the issues facing grasslands. It was particularly successful in reaching the NGOs and the general public but in some areas, there was a lack of engagement with the farming community. It is recognised that, if the vision is be attained in the long term, new ways need to be found to inspire many more landowners and managers. A follow-up project, Magnificent Meadows Cymru, funded by Welsh Government, is ongoing in Wales.

- **Projects/approaches that add value to produce**

One way to incentivise good management of semi-natural grassland and support farmers and landowners is to **add value to the products through marketing schemes and labelling**, linking the product to delivery of conservation. For example, many mountain areas in Europe have adopted the European Optional Quality Term for “mountain products”. In Romania this has been further developed at the national level to make it simpler and cheaper to access and this has helped farmers in these areas to secure better financial rewards for their products. The National Mountain Area Agency, which is a part of the Ministry of Agriculture and Rural Development, oversees its implementation (Oreka Mendian report).

A number of projects attributed part of their success to the promotion and branding of products. For example, the **AGAP project** supported the niche marketing of meat. The farmers were keen to market produce under a brand that could add value and with help from the Agrisgôp programme, the Wildlife Friendly Produce (WFP) brand was launched in August 2010. Training was provided to the farmers and the meat was marketed locally through a link on the AGAP website. Initally this was very successful and the additional income generated from direct-selling represented £488/animal, and AGAP’s promotion of meat from conservation grazing assisted with restoration of some sites (Case Study 1, Appendix I).

The Pasture Fed Livestock Association (PFLA) and its Pastures for Life certification mark successfully promotes the unique quality of pasture fed meat. Direct sales are facilitated through the online website which also connects people with farmers and their stories. This adds value to the product but also increases awareness and understanding of pasture-based livestock production. With a growing and active membership in Wales there is great potential to further develop the links between livestock production and semi-natural grasslands (PFLA website).

- **Project/Approaches that are supported by a good network of landowners i.e., meadows groups**

Meadows groups are varied in their make-up and focus but all provide a network for owners of and people interested in meadows and flower-rich grasslands (Case Study 9, Appendix I). They can include farmers, small-holders, homeowners with larger gardens

and community groups. Meadows groups are often grass-roots initiatives, either run by dedicated people within the group, or sometimes they have been set up and run by a funded facilitator. They all tend to have an organising committee that runs events and activities to support meadow owners with management and enhancement of their grasslands, creation of new meadows and sometimes providing services such as surveys. The main purpose of most meadows groups is to share knowledge and skills in making and managing meadows but some groups have purposefully been set up to campaign for more biodiversity and better wildlife management in their locality.

One of the longest standing groups is the **Monmouthshire Meadows Group** (MMG) which has been in existence since 2003. The group is focussed on helping members manage their meadows. The range of services include, ecological surveys, management plans and practical support with, for example, links to contractors and owners of livestock. The work of the group now covers approximately 200 grassland sites, 242 ha – 10% of the semi-natural grassland resource in Monmouthshire. Since formation, the group has received funding and support from a variety of organisations, including the Heritage Lottery Fund, NRW and PONT. Running costs are also supported by membership subscriptions, fundraising events and sales of publications. The small and fragmented nature of sites poses challenges in securing cutting and grazing management, and they generally fall outside the remit of agri-environment schemes, so the work of the group has proved to be vital in maintaining and enhancing the network of small grasslands in Monmouthshire.

Figure 9. Monmouthshire Meadow. Source NRW Case Study 2019

The Herefordshire Meadows Group (HMG) was set up in 2015 and it is now a successful network of meadow managers, united by an interest in restoring, creating and conserving flower rich grasslands and promoting their value as part of a productive farm business. The group attracts both farmers and owners of smaller grassland areas and now has 400 farmers and owners in its network. It is supported by Natural England as a Facilitation Fund Group. The group holds events and discussions on how to manage, create and restore meadows to benefit wildlife, soil and water quality, historic features, natural flood management and livestock farming businesses. It also acts as a forum, building up a network of local people with skills in plant identification, management advice and contracting services for grassland management.

Meadows groups can be very successful in providing an active network, engaging with and connecting owners. For some groups this is focussed on owners of small grassland sites but the Herefordshire Group has shown that it can be very beneficial to include farmers in the network. The advice and support of the groups has resulted in better management of meadows and, for example, the Monmouthshire Meadows Group has helped to achieve good management across a significant area.

A number of meadows groups have been established in Wales with variable success. The groups function best in the long term if they are grass roots initiatives, although support to help them set up is useful. Plantlife are working with a number of groups in Wales, providing facilitation that will help the groups work together to decide what sort of governance they want and the activities they will undertake. This ranges from groups who will just be a network with some kind of on-line forum to exchange information, to those with a constitution who run events, set up machinery rings etc. Over the years, some meadows groups have been established as part of projects but this top-down approach often means that they lose momentum or fold completely once the project ends.

3.3 What has not worked well, what are the problems?

- **Short term nature of projects with loss of both funding and expertise**

A number of projects have led initially to great strides in achieving better management of habitats but once the funding ceases sites can quickly revert to poor management. The driver of the project is often the Project Officer and without that person in post to coordinate and support change momentum is quickly lost.

For example, the Coronation Meadows Project, 2014 – 2016, was set up to implement HRH The Prince of Wales' vision to designate a meadow in each county as the 'county coronation meadow' and create a least one new meadow in every county using seed from the designated meadow. The project was led by a partnership of The Wildlife Trusts, Plantlife and the Rare Breed Survival Trust and funded by Biffa, with a grant of just over £1 million. Over the two-year period it created 90 new meadows, 405 ha; it produced accessible best practice guides for meadow creation and it ran a successful public engagement programme, raising the profile of the plight of meadows. However, the lack of post project support led to reversion of poor management of some meadows and the designation of a Coronation meadow didn't necessarily transform the management of all meadows.

The AGAP project initially transformed the management of a number of important sites across Anglesey. However, when the funding ceased in 2014 the lack of coordination and steer, and lack of funds to continue with capital works, resulted in some site becoming neglected and losing condition. It is not possible to give any detailed figures on the decline in sites as with so many other projects, after funding finished, there was no follow up monitoring and coordination of site progress. Following the closure of the project, no other sites were progressed as the partnership lost momentum. In addition, the marketing group did not continue without support although individual farmers are still using the Wildlife Friendly branding.

It summary, long-term change in site management results from continued financial and practical support, such as seen in the **Caeau Mynydd Mawr Project**, the **Kent Downs Grassland Project** or the **Farming for Conservation Programme on the Burren**. There is also evidence that where farming systems have been impacted by the project that the positive changes are sustained beyond the lifetime of the project. This is seen in, for example, the grazing of the Devon Red Ruby cattle on Coity Wallia. Long lasting change also results from farmers adapting their business to work with their semi-natural grasslands, such as with Hill Top Farm in Malham.

The short-term nature and fragility of some of the projects reviewed, in part, reflects the lack of 'ownership' amongst the farming community and the disconnect between the project site and the farming system and farm business. For long term resilience to be achieved these key aspects need to be addressed.

- **Scale of delivery and impact on connectivity and resilience can be limited**

Many projects deliver good results site by site and sometimes this has helped to make small gains to addressing the issue of poor connectivity but there are few examples where the scale of the work has achieved semi-natural grassland resilience. The main exceptions

are the **Kent Downs Grassland Project** the **Burren Farming for Conservation Programme** and to a certain extent the **Mynydd Mawr Project** although this has a very specific species focus i.e., only operates on sites with marsh fritillary.

The Kent project has created and restored 1330 ha of flower rich grassland and this is now forming an effective network. The vision for a landscape rich in flowers and seed to support wildlife is coming to fruition with key species showing a positive response to the changes. For example, Duke of Burgundy butterfly and black-veined moth, are now colonising arable reversion grasslands, and both species are showing upward trends in populations. Farmland birds such as corn bunting have also established breeding territories in the new grassland areas, again taking advantage of the insect-rich habitats.

- **Lack of information on site management and condition**

In reviewing projects and approaches it has often been difficult to get a clear picture of the ongoing condition of sites both during and post project. All too often, even if monitoring does take place, the results are not shared with farmers and landowners. As noted above, the sharing of information can be very empowering for farmers and instil a sense of ownership and pride. Projects can fund limited survey, baseline condition monitoring and repeat monitoring but rarely is there funding to do any long-term monitoring. Complex monitoring protocols are too time consuming and costly and whilst intentions are good, monitoring is typically not repeated.

Payment for results/outcomes approaches have a built-in requirement for monitoring and therefore on projects like the Burren Farming for Conservation and Payments for Results trial, the changes in the condition of the habitat are tracked over time.

- **Site condition addressed in isolation from the farming system – land sparing rather than land sharing**

To date many projects and approaches, including many NRW section 15 agreements for designated sites, look at the site in isolation from the farm. There is a tendency for this to perpetuate the disconnect between farm and semi-natural habitat and this can lead to sites being undervalued and vulnerable in the long term. This approach is about land sparing, looking after small isolated patches, rather than land sharing. It is suggested that more than for any other habitat, land sharing is key to supporting existing semi-natural grasslands and expanding the resource. Long term resilience in semi-natural grassland is best achieved through linking management with the whole farm business.

3.4 Summary

To be resilient, semi-natural grasslands need to be able to thrive in a network of rich habitats across a farm and across the wider landscape. Though some of the projects reviewed have been successful in tackling the condition of individual sites, in general, projects in Wales have not been effective at expanding and connecting grasslands and the positive impacts of project work can be short lived. The outputs of the projects considered in this review are summarised in the table below.

Within the review there are only two projects/approaches that have achieved long lasting resilience of semi-natural grasslands, the **Kent Downs Grassland Project** and the

Burren Farming for Conservation Programme. Notably, the core funding for both, for agreements and for farm advisers, has come from the agri-environment scheme. The two projects have worked to ensure that the agri-environment schemes work effectively to deliver large scale and long-lasting change.

There are other approaches that have the potential to be applied more widely to achieve semi-natural grassland resilience, the **Llŷn Payments for Outcomes Trial** and the 'less is more' approach, illustrated by Hill Top Farm, Malham. The **Shropshire Upper Onny Farmers Group ELMs Test and Trial** also looks promising but it is too early to be able to assess how well this whole farm approach delivers for semi-natural grassland resilience. The Mynydd Mawr project has delivered significant areas of habitat improvements but the funding mechanisms only allows work on marsh fritillary sites.

Table 6. Summary of resilience by project/approach

Project	Diversity	Extent	Condition	Connectivity	Longevity of management
AGAP	Medium	Medium	Medium	Medium	Medium
Burren Farming for Conservation Programme	**High**	**High**	**High**	**High**	**High**
Coronation Meadows	Medium	Medium	Medium	Low	Low
Caeau Mynydd Mawr	Medium	**High**	**High**	High	Medium
Elan Valley Meadows and Elan LINKS	Medium	Low	Medium	Low	Medium
Gwendraeth Grasslands Project	Medium	Medium	Medium	Medium	Low
Kent Downs Grassland Project	**High**	**High**	**High**	**High**	**High**
Llŷn Landscape Partnership Farming for the Future, Payments for Outcomes Trial	**High**	Medium	Medium	High	Medium
Monmouthshire Meadows Group	**High**	**High**	**High**	Medium	Medium
Saving Our Magnificent Meadows	**High**	Medium	Medium	Medium	Low
Stepping Stones Project, Whole Farm Planning, DEFRA Test and Trial, Shropshire					Too early to assess
Conserving the Park – Gwarchod y Parc PCNP	**High**	Medium	**High**	Medium	**High**

For grasslands to be resilient in Wales there needs to be a transformation of approach at scale and there need to be long term solutions to management. Many projects in Wales have been successful in improving the condition of individual sites but the benefits are short lived, with reversion to poor management once the project funding has ended. Projects have rarely been able to significantly extend the resource or improve connectivity. There needs to be a much greater focus on scale and longevity of management.

It is suggested that the best way to achieve this in a farmed landscape is to embed the approach in livestock farming systems by taking a whole farm approach and giving ownership of results and delivery to the farming community. But for this to work ecologically there has to be an overall vision for the network that is based on good environmental knowledge. The solutions in any given area are likely to be varied so there has to be a flexible and fair approach to funding, such as a Payments for results/outcomes approach. At the core of any successful approach or project is the relationship between the advisers/project officers and landowners/farmers and to achieve this, resources, time and patience are needed as well as the exchange of knowledge and understanding. Relationships between farmers/landowners can also be crucial in achieving positive change and all projects and approaches need to consider how best to support and facilitate farmer networks. The farm business is key to making the changes that are needed and there needs to be more focus on support for financial assessments with greater consideration given to the 'less is more' model.

In some areas, a significant part of the semi-natural grassland resource may not be owned by the farming community, such as single field owners, smallholders and large gardens. These small and often scattered sites can make an important contribution to networks and here there needs to be support to continue and expand the work of the successful Meadow Groups.

Past and current projects and approaches have shown that support for adding value to products can help with delivery and future work should, where possible, support farmer networks to explore these opportunities. The leasing of stock and support for the setting up of new herds of hardy stock has also been shown to help deliver good management. There is some evidence that this approach also helps with maintaining longevity of management. Increasingly, there is a greater role for new ways of managing semi-natural grasslands such as deferred grazing and rotational grazing. In places, small scale re-wilding may be part of the future network.

In some areas, large tracts of semi-natural grassland are owned and managed directly by NGOs. Grasslands may suffer on NGO land if, for example, efforts to address climate changes focus work and resources on peatlands and tree planting. Raising the profile of grasslands is critical and steps need to be taken to ensure that there is both a commitment to grassland conservation and expertise within NGOs to advise on land management. The Plantlife-led Magnificant Meadows project in England has been able to train new grassland advisers who have subsequently secured work within NGOs and lessons could be learnt and more widely adopted from this approach (Ref pers comm Isobel Hall).

Though the approaches in making a step change for semi-natural grasslands may differ between the three landowning types – farming community, NGOs and small landowners – all are ultimately parts of the same ecological networks and ideally there would be strong links with some degree of joint working and joint delivery.

There is now much greater understanding and knowledge of how to improve grassland condition or create and restore flower rich grasslands. But unless there is focus on larger scale delivery, with a shift in approach and a transformation in understanding and perceptions of semi-natural grasslands, it is difficult to see how resilience of semi-natural grasslands in Wales can be achieved.

4. Agri-environment schemes in Wales, what has worked well and what is needed for the future

An effective agri-environment scheme can offer financial incentive, support and relatively long-term agreements. Once an agreement is in place it can provide a security of annual payment and longevity. This is a significant incentive for farmers and landowners to enter agreements.

Discussion at two recent NRW workshops on the approaches of Glastir and Tir Gofal, in order to inform the future agri-environment scheme, the Sustainable Farming Scheme (SFS), is summarised below (Burrows, NRW, unpublished, March 2021).

Discussion at the workshops concluded that there were several key benefits to the Tir Gofal approach compared to Glastir:

- Priority habitats were mapped and recognised and this then informed agreements, ensuring that farmers managed them appropriately.
- Derogations from rules were relatively easy to obtain and this allowed flexibility.
- Funding was provided for farmers to receive training.
- Tir Gofal worked well locally, particularly where effort was made to target species, such as arable plants, grassland fungi and marsh fritillaries.
- Officers were based close to NRW regional staff, and multiple, small meetings facilitated advice at a local level.
- Officers tended to have good relevant experience and knowledge and were well supported in their teams.
- NRW staff concluded that Tir Gofal was more effective at delivering benefits on SSSIs.
- Tir Gofal officers were allowed more time to draw up agreements and support farmers, thus facilitating the development of good relationships.

These benefits, such as good relationships, flexibility and training, have all been highlighted as being important elements of a successful approach.

In contrast, the delivery of Glastir has experienced problems and this is attributed to four key issues:

- Poor retention of staff meant that officers were often inexperienced, lacked sufficient training and had not been able to build up relationships with farmers.
- There was little or no flexibility in approach and this resulted in farms being squeezed into prescriptions that were not suitable for the farm. There was little/no flexibility to take account of the local conditions, weather or farming system. The inflexibility of approach was in part a result of the prescriptive nature of the agreements, compounded by the inexperience of the officers.
- There was a lack of repeat monitoring and therefore limited information on progress and lack of opportunity to flag up problems.

- The targeting of agreements sometimes prevented putting options on valuable habitat where it lay outside target areas.

Recommendations from the workshops for the delivery of a successful SFS in the future included:

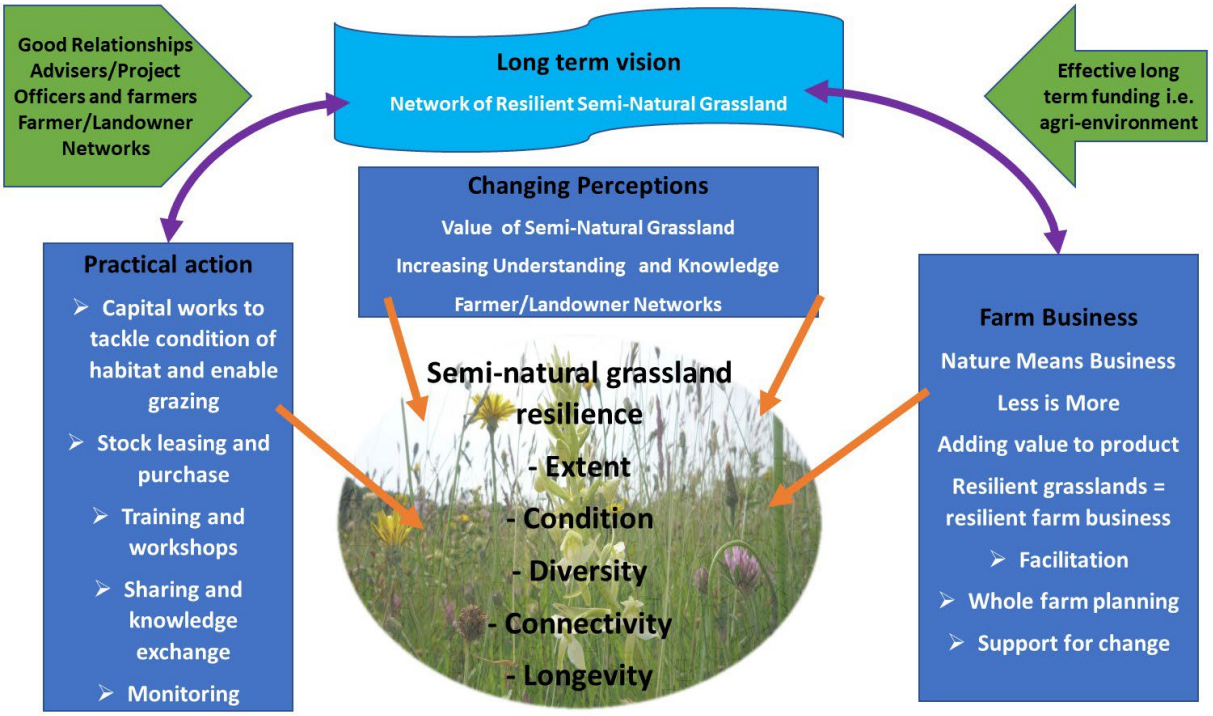
- Officers need to be experienced or well trained, and there needs to be adequate support and training in place to maximise the benefits of the scheme.
- Officers need adequate time to enable them to develop relationships with landowners. This could be on a 1 to 1 basis but also in the form of facilitated farmer networks as being developed in England, where a facilitation fund is provided.
- Mapping of habitats and potential habitat network needs is critical. Long-standing maps and recent remote sensing provide some information but land needs up-to-date survey or ground truthing to ensure that environmental outputs are optimised in every scheme.
- If a farm is not mapped already, a clause needs to be included in the scheme that unknown areas must be mapped.
- The ideal would be for the SFS to adopt a payment for results/outcomes format as this has proved so successful in, for example, the Burren.
- Monitoring needs to be factored into the delivery of the scheme. It is critical for success, for both being able to report strategically on scheme delivery and for being able to provide feedback to landowners. Increasing the understanding and knowledge of landowners is a key part of the step change we need to improve habitat resilience. The basis for this is a simple but intelligent approach to monitoring. Training farmers to complete their own monitoring/score cards, with external assessors reviewing at various points, could be a powerful way forward.
- The relationships with landowners are crucial to success. Different approaches need consideration, including the provision of training and discussion forums and the facilitation of effective farmer networks. These networks need support, guidance and advice to be able to take on board the depth and breadth of the changes that are needed to deliver resilience in the Welsh countryside. A key issue is that farm advisors need to have the time to revisit farms, check on progress and provide support and guidance to help the farmer to maximise biodiversity gain. Any compliance visits should be separate and not carried out by the farm advisor so that the positive relationship is maintained.

These needs are reflected in the most effective approaches covered in this review: Burren Farming for Conservation Programme and the Kent Grasslands Project. Both used agri-environment schemes to fund and support farmers. The most important elements here are not only adequate financial incentive and security of payments but the relationships between the farmers and the officers/advisers. Key to the success has been the experience and attitude of the advisers and their ability to develop constructive relationships with the farmers and landowners over a long period of time. Both approaches have been able to support farmers to make the changes that are needed to maintain, enhance and create semi-natural grasslands across individual farms and across a landscape. The Burren programme has benefitted greatly from the payments for results approach, offering greater flexibility, reward and ownership to farmers. In Wales the payment for outcomes trial on the Llŷn Peninsula is also looking promising and lessons learnt here could be used to inform the SFS.

In summary any meaningful improvement in the status of semi-natural grasslands in Wales will only be achieved through a farming support scheme or schemes that embrace the lesson learnt from previous Welsh and other schemes as set out above. These are fundamentally built on developing long-term and supportive relationships with the farming community with respect on both sides.

5. What do we need to improve semi-natural grassland resilience in Wales?

Figure 10. Model for Semi-natural Grassland Resilience



This review points to six main 'strands' of work that are needed to create a successful project/approach to delivering semi-natural grassland resilience in Wales:

1. There needs to be a **clear vision** of what resilient semi-natural grassland looks like in a given area. The vision needs to be at a broad level to enable details to flow from the farming/landowner community. Farmers/landowners need to know what is required of them, simply put; what grasslands are important in their area and the local characteristics of these, what the habitat should look like at a given time of year i.e., "abundant flowers in spring/summer for pollinators", how much habitat is optimal in a given area and how the habitat should be distributed i.e., connected rather than fragmented. It needs to capture 'what good likes like' but not necessarily about how to get there. It needs to be open to flexibility in approach and new ideas on management but it needs to convey the consequences of poor farming and be clear about the scale of the change that is needed. The vision needs to be backed up by ecological knowledge and experience and conveyed in such a way that farmers and landowners are both inspired and empowered to make decisions on their land. Delivering the vision is a long-term process and trusting relationships are key to success. Project Officers/Advisers need to have good communication and listening skills, an understanding and empathy of farming systems and in-depth environmental knowledge.

2. **The link between semi-natural grassland resilience and the farm business needs to be at the core of the approach**.

   There needs to be a financial reward for good management, restoration and creation of semi-natural grasslands. The review highlights that the paying for results approach has many benefits, rewarding effort and results. It allows farmers to make the decisions about how to manage their land and it is seen as fair and transparent. This 'carrot not a stick approach' gives farmers more ownership of progress and direct control over outcomes. Ultimately it gives financial value to the quality of semi-natural grasslands and demonstrates a clear link between nature and farm business.

   A review of the farm business is an essential part of the whole farm approach, and if the decisions that follow embrace the Nature Friendly Farming Network (NFFN concept of 'Nature Means Business', then the changes are likely to have a long-lasting impact on semi-natural grassland (ref and link). NFFN are encouraging farmers to work with nature so that they can secure profitability and resilience for the farm as well as deliver a thriving natural environment. This approach links farm profitability to nature, working with nature rather than against nature; it is the basis of the 'less is more' approach described in more detail above.

   The 'less is more' approach might be coupled with different approaches to grazing that can also benefit the condition of semi-natural unimproved and semi-improved grasslands, such as rotational grazing and deferred grazing. It might also include the development of longer-term herbal leys with uncut margins to help supplement habitat networks. Maintaining well-managed herbal leys beyond the usual 3-5 years has advantages for soil carbon and invertebrates. Changing farming systems in ways that reduce the need for inputs and reduce costs, whilst improving soil condition, carbon storage and livestock health, can all help make a more resilient farm business. Coupling this with improving the ecological condition, extending the resource and connecting up semi-natural grasslands on a farm could provide the step change that is needed to deliver a resilient ecological network.

3. **There needs to be support for practical delivery on the ground**, covering both the practical aspects of the work and enabling networks for sharing experience and knowledge and building confidence. Having an adviser/project officer who can, for example, source seed and arrange contractors, can be of real benefit. In some areas, there may be a need to help farmers and landowners with grazing, and projects have shown that cattle leasing can work well. Whilst many farmers and landowners will be willing to arrange the work themselves others may not have the capacity or means and so this extra support built into the project/approach can be vital.

   The support also needs to cover the setting up and facilitation of farmer/landowner networks. This may build on existing networks or new ones may be needed, and in places a meadows group may be essential. The networks could also provide an important role in delivering training and workshops and opportunities to share knowledge and experience.

4. **There needs to be a focus on changing perceptions** of the value of semi-natural grasslands to raise their priority at all levels and with all audiences. It needs to

reach all those that have a key role in the future of grasslands in Wales, including, the farmers and landowners, the advisers and project officers and the NGOs.

Some of the perceptions work could be delivered through existing networks and partnerships such as PFLA and NFFN. Some of it will need to be tailored to fit projects/approaches in particular areas but there are some core themes to tackle, including the benefits and role of semi-natural grasslands to:

- farm business (livestock production, long term resilience, added value of product and support of diversification);
- adaptation and resilience to climate change;
- carbon storage;
- catchment management and water quality;
- livestock health;
- people's health and well-being.

Part of the change in perception is about empowering farmers to take responsibility for semi-natural habitats.

Ideally, as has been seen in both the Burren and the Kent Grasslands work, as flower rich grasslands begin to flourish, perception can change, instilling a deep sense of pride in the achievements and ultimately in the intrinsic value of the grasslands.

5. **Relationships and constructive ways of working** need to be at the heart of any approach. To achieve change for semi-natural grasslands across a range of farms requires a high level of cooperation between advisers and farmers. Relationships are key; success is as much about people as it is about grasslands. To work well, all projects/approaches need to allow for time and resources to build trusting relationships, both between project officers/advisers and often between the farmers themselves. By building understanding and knowledge and by supporting farmers to network, to share experience and to support each other, farmers/landowners can be empowered to take ownership of their decisions. Importantly, the decisions will then be made in the context of the farm business and are thus more likely to have long lasting impact on land management of the farm. The most successful approaches have put the relationships with the farmers/landowners at the core of the project and where positive change is fairly rewarded by paying for results. Taking time to develop good trusting relationships coupled with using the 'carrot not the stick' approach is the route to achieving semi-natural grassland resilience.

   The relationship between farmers locally/regionally is also key to delivery and there is evidence to suggest that successful **farmer networks** can really help to support and change farming systems. There are some excellent examples of groups on the border with Wales, the **Upper Onny Farmers Group** and the **Herefordshire Meadows Group** and local farmer networks in Herefordshire. The ideal is to have an overarching group, perhaps themed on grasslands, and to reach farmers this needs to embrace all grasslands not just semi-natural. Then there is a need for more local groups, with links to the themed groups, that can look at more detail and support and inspire each other at a farm scale. All groups and networks need to be

set up from the grass roots and they need facilitating by an experienced adviser who is ‘on message in terms of semi-natural grassland resilience’ (pers comm Herefordshire Meadows Group).

6. **A simple and pragmatic approach to monitoring** needs to be developed. Projects can fund limited survey, baseline condition monitoring and repeat monitoring but rarely is there funding to do any long-term monitoring, so typically monitoring finishes at the end of the project. Monitoring needs to be adequately resourced and all projects and approaches should include provision of both short and long-term monitoring of the outcomes. The methods can build on the successful approaches to date, learning from what has worked well, such as on the Burren and the Llŷn Peninsula. The approach should consider how farmers can be better engaged in the survey and monitoring of nature across their farms through training, participation and with, for example, the use of pictorial monitoring of structure and flowering.

In summary, the approach, from the vision to practical work, needs to be supported by, and in the context of, an effective **agri-environment** scheme. Resourcing the running of schemes in Wales with experienced, knowledgeable and well supported local teams of officers is essential. Providing network opportunities, knowledge sharing and training for landowners and farmers will be key to the success of any future scheme. Ideally the approach should be to reward results and give a clear value to quality semi-natural habitat whilst supporting the development of resilient farm business models that have at their core resilient semi-natural grasslands. Whilst the emphasis needs to be on the ‘carrot’ approach to delivering the changes we need to develop a resilient network of semi-natural grassland, the regulatory ‘stick’ still has a role when it comes to damaging management of the natural environment. Ultimately there needs to be an end to support for environmentally damaging farming systems. For example, there needs to be support for floodplains to function more naturalistically providing a whole remit of public benefits. Such a shift in approach could make a profound difference to the resilience of semi-natural grasslands in Wales.

Funding of fair agreements based on results and covering the costs of capital works are crucial to delivering the change that is needed. On farms, this ideally needs to be secured through long term payments, for example through agri-environment schemes, providing a degree of security, continuity and longevity for change. In places it may be of benefit to coordinate other supplementary funding to ‘kick start’ work or to support those that are not able to access agri-environment scheme payments. For grasslands that fall outside the scope of agri-environment funding, meadow groups provide one mechanism for providing support coupled with a small grants pot for management and equipment.

6. Consideration of resilience needs at a spatial scale

6.1 Distribution of Semi-natural Grasslands

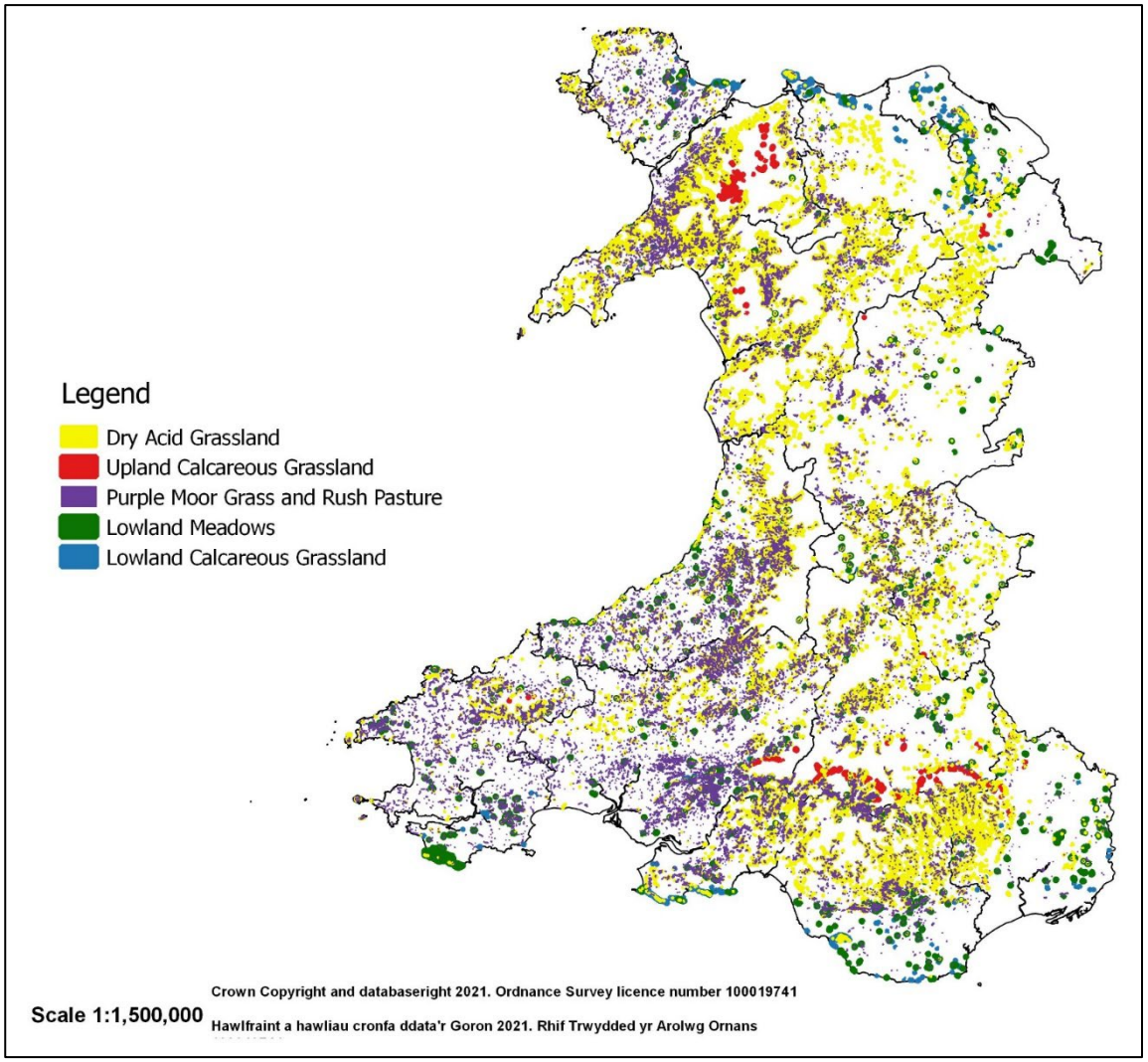
There is considerable variation in the pattern of distribution of the five main priority grassland types as shown in Figure 11. Purple moor grass and rush pasture is found primarily to the west, with the largest concentrations in Carmarthenshire, Ceredigion and Pembrokeshire and the ffridd. Lowland dry acid grassland (LDAG) is largely found in the upland fringes (ffridd) of upland blocks such as the Black Mountains, Brecon Beacons, Cambrian Mountains, the Berwyn, the Clwydians and parts of Snowdonia. LDAG is also found on low coastal hills such as those of the Llŷn Peninsula. The lowland calcareous grasslands are almost entirely limited to areas of underlying Carboniferous Limestone in North and South Wales, whilst the upland calcareous grasslands are found on Old Red Sandstone in the Southern uplands and base-rich igneous and metamorphic rock in Snowdonia. The lowland (neutral) meadows are the most widely scattered and fragmented but with some localised concentrations in parts of South Wales, Anglesey and North East Wales.

Projects directed at resolving issues on specific grassland types can deliver very targeted action over a suite of similar sites. For example, the Carmarthenshire Mynydd Mawr Project, is funded by Supplementary Planning Guidance (SPG) money intended to mitigate the impacts of development on marsh fritillary. Therefore, the project has a very specific focus on purple moor grass and rush pastures which support or have historically supported marsh fritillary populations.

However, if the long-term vision is to build resilience across the semi-natural grassland resource, then it is desirable to take a whole farm approach as changes to management on one habitat can inadvertently have a negative impact on other habitats – for example, where a landowner needs to reduce grazing on a habitat at a particular time of year but in doing so this results in over-grazing on another area of habitat. Planning at a whole farm level can help to establish optimal management across a suite of habitats. In addition, the whole farm approach allows for a review of the farming system and can initiate changes to benefit both the farm economy and the semi-natural habitats. For example, the Llŷn Landscape Partnership Payments for Outcomes Project resulted in various modifications to the farming systems, including changes in overall livestock numbers, a shift in the balance of sheep to cattle grazing and an increase in hay/haylage production.

Therefore, whilst there may be good reasons to focus initiatives on particular grassland types e.g., calcareous grassland in North East Wales, we would strongly recommend that in most instances these still take a whole farm overview even if funding is focused on the key habitat. This will allow for the priority habitat to be assessed within the context of the farm business.

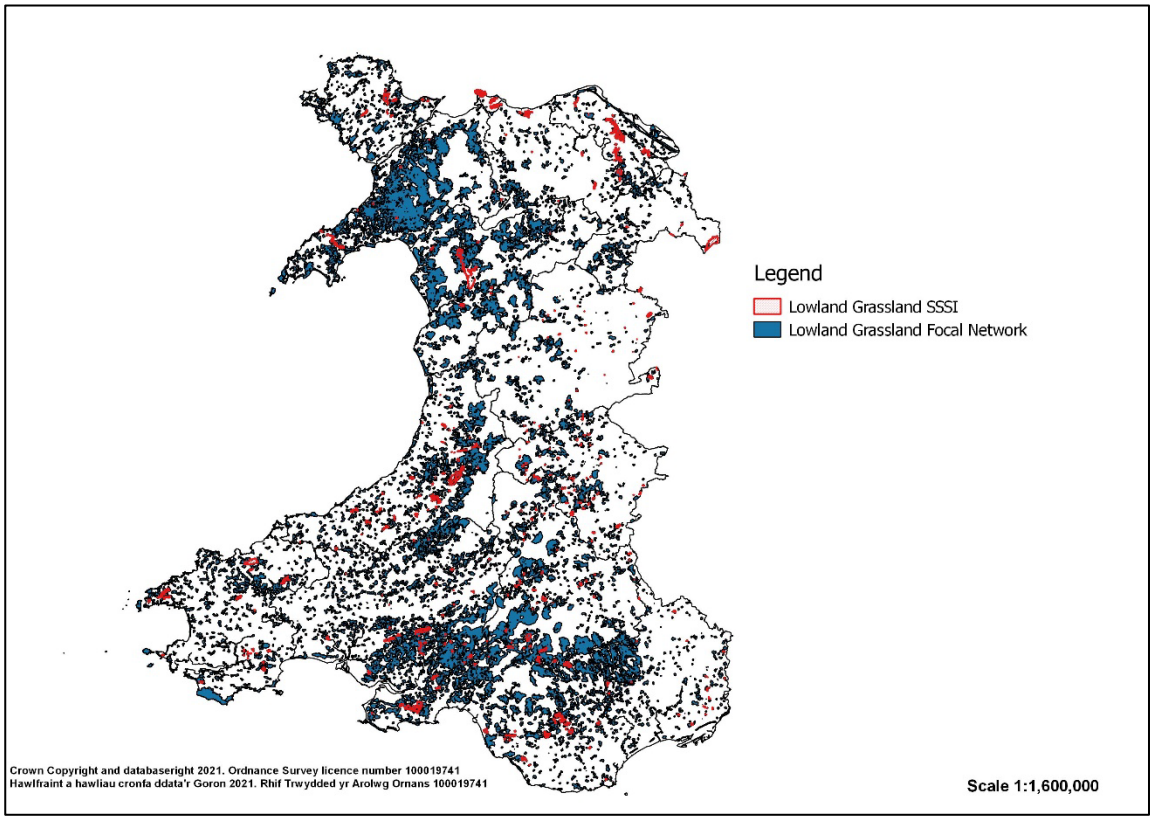
Figure 11. Distribution of priority grasslands



6.2 Grassland Networks and Designated Sites

Figure 12 shows the lowland grassland focal habitat networks (ref? – Latham et al?) and SSSIs with a lowland grassland feature (excludes coastal grassland.). As would be expected, habitat networks are most extensive around the upland fringes and to the west. Particularly extensive networks are found: on the western edge of Eryri extending down onto the Llŷn Peninsula; to the west of the Cambrian Mountains; and along the South Wales Coal field. Grassland networks are particularly sparse in the far east of Wales.

Figure 12. Grassland focal networks and SSSIs



The map shows that the SSSIs largely sit within the grassland networks however, there are some which are entirely isolated or have limited connectivity. Table 7 is a draft list of sites with poor connectivity produced by NRW. This work is based on the NRWs Priority Ecological Networks (PENs).

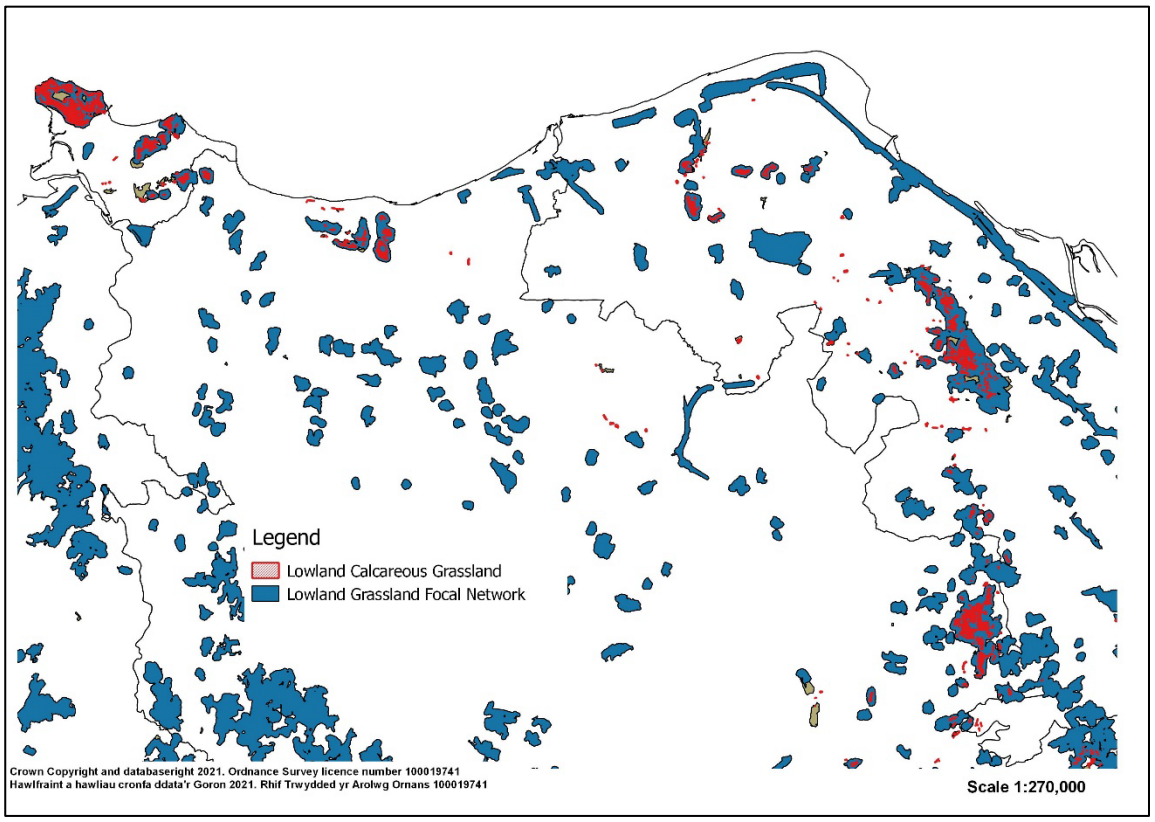
Table 7. Grassland SSSIs with limited connectivity (provisional list from NRW)

Sites	Connectivity Notes
Banc Hirllwyn	12.8 ha. Not in a PEN but has its own focal network
Cae Comin Coch	1.2 ha, isolated no core or focal
Cae Ty-hen	2.5 ha, isolated, no core or focal
Caeau Clochfaen-Isaf	3.3 ha, isolated, no core or focal
Cefn Meadow	0.9 ha meadow - not in point layer as 'species' site it seems, but is isolated grassland habitat
Cefndeuddwr	Isolated, no core or focal
Cefn rofft	Isolated grassland SSSI, non-lowland core or focal, but in small upland grassland focal
Comin Helygain a Glaswelltiroedd Treffynnon	Main site in PEN, but there are 4 satellites which lie outside and are isolated. Northern

	most has its own core and focal and this should be part of PEN
Crabtree Green Meadow	2.7 ha, isolated, no core or focal
Craig Adwy-wynt a Choed Eyarth House a Chîl-y-groeslwyd	Isolated, no core or focal
Cwm Llanwenarth Meadows	3.1 ha, just isolated with no core or focal, but large upland PEN nearby,
Derwen-fach Meadow	1.2 ha, isolated no core or focal
Dinham Meadows	15 ha total, but several small sites lacking connectivity between them and no core or focal
Gwaun Bryn (Bryn Pasture)	Only 0.8 ha, isolated, no core or focal
Gwaun Efail-Llwydiarth	Tiny site 2.4 ha, isolated with no core or focal
Gwaun Llan (Llan Pastures)	Tiny site, isolated with no core or focal
Gwaun Wern-y-wig	2.3 ha site, no core, but has small focal and other focal networks nearby
Gweunydd Dolwen	Tiny site, isolated with no core or focal, although large focal near to east with potential for connection
Gweunydd Dyfnant	5 ha site, a lowland island surrounded by upland, included in an upland focal network
Gweunydd Ger Fronhaul	6.6 ha, isolated, no core or focal
Gweunydd Llechwedd-newydd	Tiny site, isolated. No core but adjacent to small focal
Gweunydd Pendinas	7 ha. Isolated, no core or focal (but should be big enough to generate these? Inconsistency in P1 perhaps.
Herward Smithy	Small site 0.57ha and habitat area; isolated with no core or focal.
Hollybush Pastures	1.5 ha, isolated, no core or focal
Kingswood Meadow	Only 0.5 ha, isolated, no core or focal
Llanddulas Limestone and Gwrych Castle Wood	Eastern block of SSSI missing from PEN. Has its own detached core and focal.
Rhos Garth-fawr	8.5 ha. Wet land site mainly, in own core and focal
Llanymynech and Llynclys Hills	Isolated, though has its own small focal. Could have been a satellite bit of PEN.
Mariandyrys	South eastern part of site is isolated with no core or focal.
Coed Tyddyn-du	Mainly a woodland site but grassland interest too? Not in PEN but part of large focal, no core
Rhosydd Nant-yr-henfron	12 ha. Falls within a focal network, but outside of PEN
Stanner Rocks	Isolated no grassland core or focal
White Grit Meadows	3.9 ha, isolated, no core or focal

Although the habitat networks provide information on potential connectivity, they do not give a complete picture of the overall resilience of the grasslands; for example, a network may be extensive but comprise mainly poor-quality grassland under inappropriate management. The networks can however provide a focus and scale for grassland interventions. For example, in areas where SSSIs are supported by extensive habitat networks, the focus can be on working collaboratively with landowners to improve habitat resilience within the wider networks over fairly large areas, for example the South Wales coalfield grasslands. However, where the SSSIs are isolated, the emphasis, at least initially, will be on working at a more local scale with individual farmers/landowners to improve the condition of the SSSIs and look at the potential to buffer the sites through habitat creation. Ideally, over time this will expand to include neighbouring land so that new networks are created. There are of course many areas where the situation is somewhat intermediate, with some large sites within focal networks but with small isolated sites unconnected between. Figure 13 shows the calcareous grasslands of North East Wales, with some large sites sitting within focal networks such as the Great Orme, Halkyn Mountain, Prestatyn escarpment and Bryn Alyn but with a series of small sometimes very isolated sites between these. Interventions in these circumstances require both a focus on improving habitat condition within the existing focal networks and seeking ways to buffer and connect the isolated sites.

Figure 13. North-east Wales focal networks and calcareous grassland



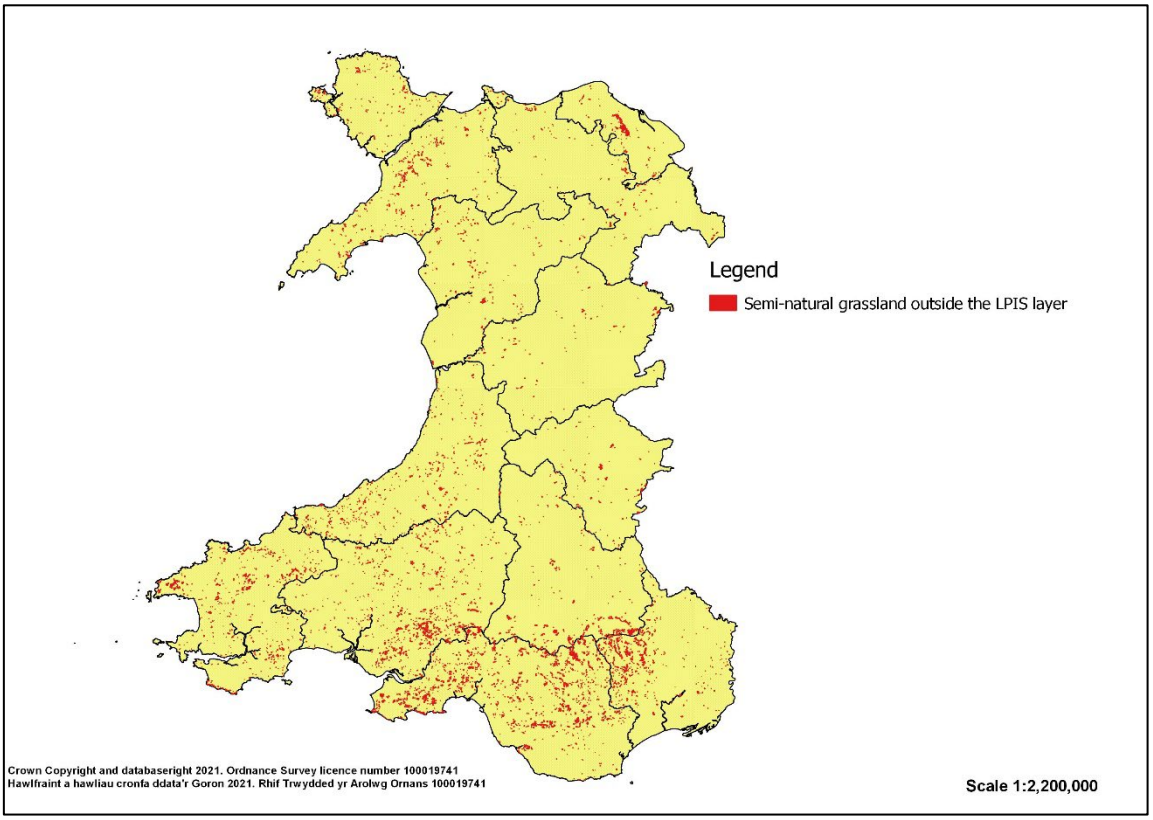
6.3 Agricultural vs Non-agricultural Land

The vast majority of existing semi-natural grassland lies within registered agricultural holdings as mapped on the LPIS layer (Table 8 and Figure 14). Some caution is needed in interpreting these data as it appears that some agricultural land i.e., some common land is not included in the LPIS layer from where these figures were drawn. Therefore, it is likely that the actual percentage of land within agricultural holdings exceeds 91%.

Table 8. Semi-natural grasslands within and outwith the LPIS Layer

Grassland type	Ha Inside	Ha Outside	Ha All	% Inside	% Outside
Marshy	32,701.67	3,279.01	35,980.68	91	9
Lowland Calcareous	516.89	249.94	766.83	67	33
Upland Calcareous	361.75	506.63	868.38	42	58
Neutral	1,019.19	650.01	1,669.20	61	39
Acid	40,982.08	3,139.24	44,121.32	93	7
TOTAL	75,581.58	7,824.83	83,406.41	91	9

Figure 14. Semi-natural grassland outside the LPIS Layer



Areas of semi-natural grassland outside agricultural holdings are often under the ownership of smallholders, ‘hobby farmers’, horse/pony owners or individuals who simply have a few fields attached to a property. There are also small areas of semi-natural grassland on land owned by business, conservation organisations and local authorities, the latter including development land and roadside verges. Information on the condition of these non-agricultural landholdings on private land is not easily accessible except where sites lie within SSSIs or are supported through local initiatives such as Meadows Groups.

Figure 14 shows a significant concentration of semi-natural grasslands on non-agricultural land in the South Wales Valleys, Gower Peninsula and Carmarthenshire. These grasslands are also frequent in the west, in Pembrokeshire, Ceredigion, Gwynedd and Anglesey, but more scattered in the east.

6.4 Using Spatial Data to Target Initiatives

A scrutiny of the spatial data sets described above can provide a mechanism for targeting initiatives. For example, there are areas where the extent of semi-natural grassland is significant, with potential to improve connectivity and support the SSSI network.

The findings of this review emphasise the benefits of long-term support and building relationships and trust with the farming community. Therefore, there is merit in looking at existing or recent projects which have engaged farmers or have the potential to do so. Combining this information with the spatial datasets provides the following provisional list of priority areas:

Table 9. Provisional Priority List

Area/Region	**Grassland**	**Projects**	**Farmer Engagement**
North East Wales	Lowland calcareous grassland Acid grassland including species-rich examples Neutral grassland Incl. meadows	Landscape Solutions SMS (Denbighshire County Council) Completion March 2022	Relatively few private farmers/graziers. Mainly NGO or LA land
North East Wales	Lowland calcareous grassland Acid grassland including species-rich examples Neutral grassland Incl. meadows	North Wales Cotoneaster Control Project (NWWT). Completion March 2023	Not specifically
Llŷn	Coastal grassland Neutral grassland and meadows Acid grassland incl. grassland fungi sites	Llŷn Landscape Partnership SMS/Payment for Results. (NT, Gwynedd County	Working directly with farmers

	Small areas of marshy grassland	Council). Completion 2022.	
Elan Valley and Radnorshire	Marshy grassland/rush pasture Neutral grasslands incl. meadows, Acid grassland incl. grassland fungi sites	Elan Links NLHF (Elan Valley Trust) – completion 2023	Work with tenant farmers
		Rhos Pasture Restoration Project (Radnorshire Wildlife Trust) – completion March 2023	Open to farmers
South West Wales Coalfield	Marshy grassland/rush pasture Neutral grasslands inc. meadows Acid grassland	Caeau Mynydd Mawr Marsh Fritillary Project (Carmarthenshire County Council) – ongoing	Works with a range of farmers and non-agricultural land owners
Pembrokeshire	Marshy grassland/rush pasture Neutral grasslands incl. meadows, Acid grassland Coastal grassland	Gwarchod y Parc (Pembrokeshire Coast National Park) - ongoing	Works with a range of farmers and non-agricultural land owners
Gower	Neutral grassland and meadows Calcareous grassland Marshy grassland/rush pasture Coastal grassland	Gower Hay Meadows and Hedgerows Shared Outcomes. PONT/NRW. 2021	Worked mainly with private owners, small holders etc.

Note that this is not an exhaustive list of current and recent projects.

The Welsh Government's Sustainable Management Scheme (SMS) has supported a number of farmer-led groups to deliver environmental benefits. There would be considerable merit in working with these existing groups to develop ways of working on grasslands to aid future facilitation of new groups in other parts of Wales. These groups are currently fairly spread out across Wales but they represent a new way of working similar to approaches being developed in England such as the Upper Onny farmer Group. Examples of groups set up under Windows 1 to 4 of the SMS include Fferm Ifan in eastern Snowdonia, Pennal Farmers in the Dyfi area and Camlad Valley Farmers in eastern mid-Wales.

7. Costed Programme

7.1 Strategic Outcomes

- A network of well connected, resilient, semi-natural grasslands encompassing the full range of grassland types supporting a suite of characteristic, vascular and non-vascular plant species and associated fauna.

- Sustainable management of semi-natural grasslands in Wales, embedded in farming practice through choice

Table 10. Strategic priority themes and actions to achieve these goals

Priority Theme	Priority actions
National Coordination	Reinvigorate the Wales Grassland Group and provide the Secretariat. Include farming and conservation interests on an equal basis. This group will agree a vision. Establish a strategic team to facilitate, support and enable the activity of this programme. Work with existing farmer groups and engage more farmers. Collate information on work undertaken by NGOs for grasslands and coordinate future action using best practice, existing expertise and broad networks within the NGO community. Use this information to target a small habitat grant that can target smaller landowners /organisational land outside the larger project areas. Facilitate the co-production of joint initiatives between conservation organisations (NGOs), farmers/landowners and other interests. Collate information and feed into the development of the SFS and other policy initiative e.g., Payment for Ecosystem Services (PES). Prioritise and support projects which already work with the farming community/have potential to do so and support them to seek funding. Facilitate semi-natural grassland management on non-agricultural land including managing a small grant pot

	National coordination and support for facilitators of local groups (Meadows Groups and other grassroots delivery groups) including facilitating a Meadows Group facilitation fund and access to advice, support and training etc. Work with the conservation organisations (NGOs) to seek long term solutions to managing semi-natural grasslands on their own land. Work with individual landowners on isolated SSSIs - delivery local but coordination through Nature Networks or other national funding scheme.
Work with farmers to develop a 'farmer led' approach	Work with farmers academic/training bodies and NGOs to create and support a network of demonstration farms. Provide relevant training and support peer-to-peer learning. Help grassroots groups to facilitate farmer led initiatives, build partnerships and access environmental and business advice. Work with farmers and conservation organisations (NGOs) to ensure projects on agricultural land work with the farm system or help prepare the farm for entry into the SFS.
Clear linkage between semi-natural grassland resilience and farm business	Establishing new relationships and ways of working between the conservation organisations (NGOs and statutory bodies) and the farming community moving towards farmer led groups. Prioritise projects and initiatives with the potential to work with/through the farming community e.g., the Kent model (Case Study 7), and submit these to external funders. Support for members of the local farmer networks to review their business and sustainability with advisers e.g., linked to the work by Nethergill Associates – 'less is more'.
A national monitoring programme	Better coordination of and more resources for high-level monitoring. A simple and pragmatic approach to site/farm monitoring. Training rolled out to farmers, NGO staff and other landowners. Development of app for collecting information. Development of mechanism for collating data e.g., LRCs.
Develop evidence base and communications	Develop the evidence for "nature means business" for semi-natural grasslands. A focus on changing perceptions on the value of semi-natural grasslands to raise their priority at all levels, including work at a strategic level to ensure that NGOs are geared up for addressing semi-natural

	grassland resilience as a key part of the solution to climate and nature crisis. Update the Lowland Grassland Management Handbook and develop toolkit to support land owners/managers to work toward favourable condition of different grassland types.
Feed into development of Sustainable Farming Scheme and other strategic funding initiatives	Use expertise gained from working with farming and conservation communities to feedback into the development of the approach to SFS. Develop approaches to PES for semi-natural grassland habitats.

Why this approach?

Ninety one percent of semi-natural grasslands lie within agricultural holdings and therefore the farming community is key to improving the resilience of this resource. Evidence within this report has shown that short-term projects rarely deliver long-term outcomes for grasslands. We need a paradigm shift from the focus on short-term projects to long-term engagement and support. This shift requires coordinated strategic, regional and local actions that bring in the farming community as a key partner in supporting and delivering long term sustainable management practices on agricultural land. A strategic team would do this.

Engaging farmers: The team would work with farmers and other partners to secure farmer led initiatives. These groups would be supported to explore the challenges facing farming and the environment from their perspective and where they see the opportunities. This would inform workable solutions that can be delivered as part of a profitable farming system and help change the perception of the value of semi-natural grasslands. Project funding can then be sought to support long term grassland benefits, but only if farmers sign up to the approach and it is financially sustainable as part of their farm business or through supporting entry into appropriate options in the new Sustainable Farming Scheme.

Establishing new partnerships: The team would play a key role in joining up the aspirations of the conservation and other organisations with the ambition of farmers and their need to make a living. In doing so they could then help establish workable partnerships. An equal partnership similar to those on the Burren (Case Study 2) or following the model of the Stepping Stone project and the Upper Onny farmer Group (Case Study 12). In this way there is greater potential to build projects or initiatives that will deliver long term benefits for semi-natural grassland management. The critical step-change required is that farmers help shape projects and other initiatives so that they are good for the farm as well as improving the resilience of semi-natural grasslands.

Supporting farmer-led models: Farmer led models have also worked elsewhere in the UK. An example is the Kent Downs Grassland Project (Case Study 7). This farmer-led cooperation has achieved ecosystem resilience at scale while also working within farming systems. The project has a permanent facilitator working with farmers to target agri-environment money and draw down additional funding. A series of regional and local initiatives with facilitators in Wales could help farmers maximise the benefits of the Sustainable Farming Scheme, draw down funding from NRW and other grant-aiding bodies and in the longer-term look at the potential to support grasslands with PES funding.

To get to the point where we are in a position to deliver this type of model, a development phase will be required and the team would be able to facilitate this and draw in funding form elsewhere if required.

Maintaining a Strategic Overview: A team, alongside the Wales Grassland Group, would have the knowledge and the remit to take a strategic overview of grassland projects and schemes. This would be informed by the agricultural, conservation and other expertise and be able to agree and support priority work. The team would also maintain an overview of information collected through evidence gathering, including through monitoring, and use this to feed back into policy and the development mechanisms for delivery on the ground (SFS, PES, Future Grants). Learning and experimental work could be developed and initiatives lined up to apply to become SFS trials in 2023 or 2024.

Helping Meadows Groups: Meadows groups in Wales have been successful at bringing together meadows owners so that they share ideas and even equipment. As previously stated, these groups operate best if they are grassroots and self-governing; however, a small fund which they can access to help with their establishment, and to help trouble shoot issues, has proven useful in England. A similar fund could be established in Wales and administered by the team; this would offer value for money enabling meadows owners to do more together and share learning and experiences. This would mainly target small holders, non-agricultural land owners and others who cannot access the SFS.

7.2 Development of the Programme

7.2.1 The Strategic Grassland Team

The establishment of a Strategic Grassland Team is essential to promote step change in the approach taken to the management of semi natural grasslands. A model could be adopted similar to that of Natur am Byth, or the National Peatland Action Plan. With each of these models, one member of staff is hosted by NRW and others are hosted by partner organisations (NGOs, National Park Authority etc.) with appropriate expertise and skills. Ideally, the costs of the team would need core funding from NRW or Welsh Government for 5 years.

Grasslands Team Manager

- High level coordination
- Advocacy and policy work
- Linking to other projects
- Building evidence and identifying gaps for future projects and initiatives
- Green finance, working on PES
- Develop methodology to manage the Meadows Group Facilitation fund and allocate this fund to grassroots groups such as meadows or farmer groups
- Develop the criteria and simple assessment, application and claims processes for the small habitat grant
- Work with partners and if agreed, lead on grant application/s to support activity of the programme in years two to four.

- Lead on research and the development of toolkits
- Lead on programme evaluation

Agricultural Coordinator

- Coordination of peer-to-peer workshops
- Organising demonstration and training events for farmers, farm advocates and agricultural advisors
- Facilitate partnerships between farmers and other organisations including NGOs to develop long term grassland initiatives on agricultural land
- Develop ways of working and support required for farmer led groups and networks.
- Work with partners to draw down funding and submit applications for two semi natural grassland projects or lead on co-production of a Wales-wide project.
- Manage the habitat improvement small grant and work with other staff and partners to ensure excellent support for project officers during delivery and claims processes
- Work with the Wales Grassland Group to prioritise and coordinate research needs, manage contracts for research and the revision of the Lowland Grassland Management Handbook
- Develop simple habitat monitoring methodology with the farming community that can be used by all the projects
- Provide the Secretariat to the Wales Grassland Group

Regional Coordinators (North and South Wales)

- Facilitate the development of farmer networks and farmer led initiatives, including training and support for the network facilitators
- Deliver workshops, training and other events
- Support the Team Manager to draw down funding for activities within this programme or work with the Agricultural Coordinator and stakeholders to co-produce a Wales-wide project.
- Engage with farmer groups and help develop whole farm plans working collaboratively across farms to explore options to deliver at land-scape scale e.g., entry into the SFS trial process.
- Support and train farmers, NGO staff and other land managers to deliver simple monitoring methodologies
- Working with current grassland projects to help them to expand and engage more broadly with the farming community.
- Capitalise on current activity to demonstrate delivery at scale, leading to greater interest both from farmers and funders.
- Help meadows groups and other grassroots groups to access a Meadows Group Facilitation fund

7.2.3 Development Year

Year 1 will be a development year focused on starting engagement, building relationships, developing the project and applying for funding. Key activities:

- Secure funding to employ the Strategic Grassland Team.

- Secure commitment to fund a habitat improvement small grant budget and provide match funding for larger projects in years 2-4.
- Start to build relationships with the farming community including farming organisations and existing farmer led groups and support the establishment of more farmer networks.
- Reinvigorate the Wales Grassland Group and invite additional members from the farming community.
- Agree one of the options in Section 7.3 for progressing the grassland programme.
- Agree project and funder to support project activities over the next four years or to support a Wales-wide project.
- Agree short term projects which will be included and supported through NRW and other partners. Offer support and match funding for two to four projects, or embed these projects in a Wales-wide initiative.
- Work with interested parties (including farmer groups and NGOs) to feed into projects and agree experimental elements for SFS and if appropriate support entry into SFS trial process.
- Prioritise evidence needs to support "nature means business" for semi-natural grasslands and let one contract.
- Agree a contract to revise the Lowland Grassland Management Handbook.
- Start to establish and support a network of well-informed grassland advisors and advocates.
- Establish a fund for facilitation of Meadows Groups and other grassroots groups which is simple to access and administer.
- Establish a habitat improvement small grant budget to target grasslands excluded from agricultural support e.g., smaller land holdings, some NGO land, land owned by community groups etc. Develop the criteria and application, assessment, claims and reporting processes that are simple to access and administer. Agree a network of support officers with other staff or partners
- Start to explore approaches to PES for semi-natural grassland habitats.
- Feedback into the development of the SFS.

Table 11. National Grassland Programme – 5 Year Budget Breakdown

Activity	**Year 1 (2023)**	**Year 2 (2024)**	**Year 3 (2025)**	**Year 4 (2026)**	**Year 5 (2027)**
Staffing costs	130,000	135,000	140,000	145,000	150,000
Set up and ongoing cost	6,000	2,000	3,000	3,000	2,000
Overheads	19,000	20,000	21,000	22,000	23,000
Travel & Subsistence	9,000	9,000	9,000	9,000	9,000
Total Staffing Costs	**164,000**	**166,000**	**173,000**	**179,000**	**184,000**
Events, activities & Training	12,000	12,000	20,000	12,000	8,000
Communications including translation	8,000	8,000	8,000	8,000	8,000
Farmer advice	0	3,000	3,000	3,000	4,000

Research contracts	0	12,000	6,000	0	0
Handbook revision	0	5,000	0	0	2,000
Facilitation fund	0	10,000	10,000	10,000	10,000
Evaluation reports	0	0	6,000	0	12,000
Total Activity Costs	**20,000**	**50,000**	**53,000**	**33,000**	**44,000**
Habitat improvement small grant pot – non farmers		**30,000**	**30,000**	**30,000**	**30,000**
Capital projects – target farmers		**360,000**	**360,000**	**360,000**	**360,000**
Match Funding		**40,000**	**40,000**	**40,000**	**40,000**
Total Costs	**184,000**	**646,000**	**656,000**	**642,000**	**658,000**

Costs in red to be sourced or partly sourced by the team from external funders to support the work programme. Costs in black require core funding from NRW/Welsh Government

All costs are indicative only and will need to be adapted to deliver the agreed option and to account for the current escalating inflation rates.

The recommendation is that the staff costs over the 5 years, and the development year costs, are met through core funding provided by NRW or Welsh Government.

Table 12. Core Funding Cost – Staffing and Development Year

Year 1	Year 2	Year 3	Year 4	Year 5	Total
184,000	236,000	236,000	243,000	254,000	**1,53,000**

* These figures indicate the core investment required each year from WG or NRW. Additional costs would need to be sourced by the team and their partners

7.3 Options

Once the Team is established there are two options identified for securing funding for the delivery of the grassland programme. Both options must focus on active engagement with the farming community so that the delivery of grassland benefits is achieved through farming practices and support farm businesses either through working with their farming systems or through the SFS. The capital cost identified above supports up to 4 projects in either option.

NRW / Welsh Government continue to fund the Strategic Grassland Team, through core funding, and potentially provide some match funding for each option.

Option 1 - Separate Initiatives Securing Different Funding

- The activity part of the programme – training, research etc. – are either managed or undertaken by the Grassland Team. Funding is secured through external grant/s secured by the Team.
- The capital project delivery is separate and led and delivered by partners (NGOs, local authorities, farmers groups etc.) but supported by the Grassland Team, who agree priorities with stakeholders. The match funding is largely used to support these projects.
- It may be possible to secure SFS trial funding for some farmer groups for some of the more experimental elements. The Grassland Team could help with this development.

Option 2 – Wales-wide Project

- All activity and capital works are delivered as one Wales-wide project.
- The Grassland Team spend the development year working with stakeholders to identify up to four projects that could be developed or expanded.
- The team and stakeholders co-produce a collaborative proposal for all the activities and capital works as part of a Wales wide programme using a similar model to that of Natur am Byth.
- The Grassland Team supports the programme and undertakes work as identified in the programme above and the grant application, and provides match funding and staff time.
- The Grassland Team continues to coordinate the activity and feedback into policy, future initiatives and research priorities.

Table 13. Suggested Programme of Activity

Key Activity	**Year 1 (2023)**	**Year 2 (2024)**	**Year 3 (2025)**	**Year 4 (2026)**	**Year 5 (2027)**
Establish Team	Employ team	Team in place	Team in place	Team in place	Team in place
Re-establish grassland Group	Invite new membership from farming community Hold 1st meeting	2 meetings	2 meetings	2 meetings	2 meeting
Project development and delivery	Engage widely and select 4 x capital projects Select option (Section 7.3) Develop project/s Submit application/s	With stakeholders deliver work within this programme through project/s If necessary, submit further applications or review situation if unsuccessful	With stakeholders deliver work within this programme through project/s	With stakeholders deliver work within this programme through project/s	With stakeholders deliver work within this programme through project/s Monitor and evaluate project/s
Working with farmer groups	Identify existing groups and potential groups Explore what they want to achieve, engage partners and develop experimental work Feedback into project development if appropriate Support groups to access trials funding if available	Support groups (existing and new) Feedback into project development if appropriate Support groups to access trials funding if available Feedback learning into policy	Continue to support existing and new groups. And feedback into project development if appropriate Support groups with information on grassland options within SFS	Continue to support existing and new groups Feedback learning into policy Support groups with information on grassland options within SFS	Continue to support existing groups Feedback learning into policy Review and report

Farmer support	Run 4 farm demo events Include further events and training in grant application	Run 4 farm demo even Contracts let for farm advice	Run 4 farm demo events Contracts let for farm advice	Run 4 farm demo events Contracts let for farm advice	Run 2 farm demo events Review and report
Research and evidence	Secure funding for this within grant application	Let 2 contracts Disseminate info e.g., to inform for 'Nature Means Business'	Let 1 contacts Continue to disseminate info in a user-friendly format	Disseminate information in a user-friendly format	Report and review
Network support	Develop methodology to support grassroots advisors Use this in grant application to secure funding for training	4 training events for advisors and advocates	4 training events for advisors and advocates	4 training events for advisors and advocates	4 training events for advisors and advocates Report and review
Update the Lowland Grassland Management Handbook	Secure funding for this within grant application	Let a contract to update the Grassland Handbook particularly augmenting information on management e.g., grazing and farming practices	Continue to promote Grassland Handbook Produce toolkits for farmers	Continue to promote Grassland Handbook Disseminate toolkits and provide advice	Review content and update if required
Support organisational staff to build professional expertise	Develop training on grassland management and agricultural practice for NRW and other org staff	6 training events held (4 for NRW staff)	4 training events held Expert advisors supported through provision of toolkits and information	4 training events help Expert advisors supported through provision of toolkits and information	2 training events held. Evaluation of success of training for staff

Establish fund for facilitation of grassroots groups e.g., Meadows Groups	Develop methodology for allocation and embed in grant application	Fund established - £10,000 Manage fund allocation and reporting	£10,000 Manage fund allocation and reporting	£10,000 Manage fund allocation and reporting	£10,000 Manage fund allocation Report and review
Communications	Attend 4 shows Attend 6 LNP meetings (Or similar) meetings Attend WG and NRW events	Attend 4 shows Attend 6 LNP meetings (Or similar) meetings Attend WG and NRW events Develop and Disseminate research info and Handbook	New SFS With farmer groups organise/ pay for Wales farmer event to engage farmers more widely Attend 4 shows Attend 6 LNP (or similar) meetings Develop and Disseminate research info and Handbook	Attend 4 Shows Attend 6 LNP meetings (Or similar) meetings Attend WG and NRW events produce an at a glance guidance on the benefits and disbenefits of different grazing systems	Attend 4 Shows Attend 6 LNP meetings (Or similar) meetings Attend WG and NRW events Review and report
Monitoring training and support	Development Simple monitoring methodology and embed roll out in grant application Explore options for an app to collect data Talk to WG, NRW and LRCs about national collation and dissemination of data	Roll out and training for using the methodology Seek to advance app and data collation proposals and establish Supply data to into SoNaRR for 2025 report	Continue to train and increase number of users Review approach	Continue to train and increase number of users	Continue to train and increase number of users Review approach

Feedback into policy	Feedback to SFS and other relevant policies e.g., PES	Feedback to SFS and PES – promote work to develop a costing mechanism for services offered by semi -natural grasslands	Feedback to SFS PES Coordinate work to develop a costing mechanism for services offered by semi - natural grasslands	Feedback to SFS and PES Use projects / experimental works to test a costing mechanism for services offered by semi - natural grasslands	Evaluate success costing mechanism and include in evaluation report Report back on farmers supported who are funding work on semi natural grasslands through SFS
Produce programme evaluation report	Report on delivery	Report on delivery	Report on delivery Let contract for mid-term evaluation report	Report on delivery	Report on delivery Let contract for final evaluation report

7.4 Programme Monitoring and Reporting

The Team will provide an annual report to NRW, Welsh Government, stakeholders and the funder/s on progress made against each of the strategic themes.

A mid-term review and evaluation, and a final evaluation, will be undertaken.

Flexibility should be built into the programme to adapt in response to the mid-term review, reports or at any point if evidence shows that the programme is not achieving either meaningful farmer engagement or improved semi natural grassland resilience. The latter will be informed by the simple monitoring methodology established as part of this project and national monitoring schemes and reports. Evidence from the reports should also feedback into policy developments.

Indicators to be agreed as part of the development of the programme and based on requirements of the funders; however, to assess success of the overall programme they should report against the strategic outcomes.

Strategic Outcomes

- A network of well connected, resilient, semi natural grasslands encompassing the full range of grassland types, supporting a suite of characteristic vascular and non-vascular plant species, grassland fungi and associated fauna.

- Sustainable management of semi natural grasslands in Wales embedded in farming practice in Wales through choice.

7.5 Potential Funders

National Lottery Heritage Fund (NLHF)
https://www.heritagefund.org.uk/

For all NLHF grants there is a focus on reconnecting people with their heritage nationally, regionally and locally. All grants have to achieve specific outcomes and 'inclusion' and 'sustainability' feature strongly and must be evidenced. For both the funds below, partnerships led by a Not-for-Profit organisation or Charity can apply.

National Lottery Grants for Heritage £10,000 to £250,000

This could fund the activities part of the programme from year two onwards, if it was decided to follow option one above. For this fund, it is useful to submit a Project Inquiry Form to receive feedback before committing to a full application. The application window is always open so you can submit a project when ready. For grants over £100,000 there needs to be a 5% contribution to the project costs.

The National Lottery Grants for Heritage £250,000 to £5million.

If option two was selected to deliver an all-Wales collaborative project, this might be an option. It is very competitive and must have a strong 'inclusion' element. An Expression of Interest must be submitted and only if this is accepted can you move to the development phase, and if this is successful then the delivery phase. The application deadline is quarterly. For grants up to £1million a 5% contribution to costs is required, and for projects over that amount it is 10%. These projects need a much longer lead in period but if this route was chosen, and successful, then the project would extend a year beyond this programme.

Natural Resources Wales

The original Nature Networks Fund administered through the NHLF is now closed. NRW are currently developing a new scheme and this is likely to be on two levels:

Strategic Partnership working to support specific outcomes

Grant funding administered by NHLF

The previous scheme focused on improving the condition and resilience of the protected sites and the connectivity between them. It also funded greater involvement of the community in and around protected sites.

Esmee Fairbairn Foundation

https://esmeefairbairn.org.uk/

The Esmee Fairbairn Foundation has a number of funding tools, including grants and social investments. Approximately two thirds of their grants are for core funding. Their new strategy will introduce longer, larger grants but the number of projects they fund will decrease. To apply for an Esmee Fairbairn grant an eligibility process is required followed by an Expression of Interest. One of the five strategic aims is Our Natural World. Esmee are innovators in funding and it is worth exploring what they offer, however access to their funding is very competitive

Other Foundations

It is worth exploring opportunities offered by Foundation funding as the amounts allocated to environmental works is increasing. The top ten Foundations for environmental grants include the Esmee Fairbairn Foundation but also Garfield Weston. Although some of the top recipients of these funds are Universities and Global organisations UK charities such as the RSPB and the Woodland Trust feature in the top 25. Biodiversity and species preservation is the theme in the UK that receives the second biggest allocation; agriculture and food is the eighth (Cremona et al Nov 2021).

The Environmental Funders Network (EFN)

This Network works to increase levels of environmental support and to make environmental philanthropy as effective as possible. Its membership is made up of individual funders and Foundations and the website is an excellent resource for those seeking foundation or other philanthropic funding (EFN)

Welsh Government Sustainable Farming Scheme (SFS) trial process
WG are intending to trial some of the processes required to inform the new scheme. The timeline for the scheme is likely to be announced at the Royal Welsh Show in July. There is no funding available until 2023.

7.6 Habitat Monitoring and Reporting

This review has clearly identified monitoring as a perennial problem. Monitoring is time consuming and costly, and even conservation bodies find it nearly impossible to keep up with monitoring requirements on their own land-holdings once project funding has finished. Similarly, statutory bodies, local authorities and government find it difficult to fulfil their monitoring requirements. NRW, for example, does not have a fully resourced programme for monitoring SSSIs and many grassland SSSIs are left unmonitored for years.

There appears to be very little synchronisation and coordination between high level monitoring programmes such as Welsh Government agri-environment monitoring, UKCEH Countryside Survey and NRW SAC/SPA/SSSI monitoring. Therefore, whilst these monitoring streams might collect significant amount of data, it is difficult to fit it into a coherent picture.

Whilst all stakeholders agree monitoring is important and intentions may be good, it is unrealistic to think that organisations which are under increasing financial pressure will be able to find resources to fund complex monitoring programmes. In addition, whilst project

funding may continue to support monitoring, it is unlikely that any funding body will support ongoing monitoring.

Therefore, a national programme needs to develop quick and simple monitoring methodologies and an easily accessible reporting system. Monitoring which can be undertaken as part of regular site or farm management practices is more likely to endure than formal monitoring programmes which require significant time to organise, undertake and subsequently analyse and report on. The sort of monitoring being developed as part of results-based agri-environment schemes might offer a potential solution. This type of monitoring does not need to have as much scientific rigour as high-level monitoring schemes but does need to be able to accurately track changes in habitat condition. Farms in the Burren Programme, for example, are monitored annually and this provides the evidence on which their habitat scores and hence payments are based. There is increasing interest in the merits of self-monitoring for farmers in agri-environment schemes. This is being trialled in a number of approaches e.g., the Llŷn Landscape Partnership Payment for Outcomes Project, the Fferm Ifan SMS (for blanket bog habitat) and the Yorkshire Dales Payment for Outcomes Trail (Chaplin et al 2019).

There is currently no systematic way of collating habitat monitoring data from NGOs, local authorities, farmers, other landowners etc. Therefore, accurate reporting on habitat condition across the whole semi-natural grassland resource at a national level is not possible. As with monitoring, if a reporting system is complex and time-consuming it is unlikely to be widely adopted. A possible approach is to look at mobile phone apps for recording and reporting monitoring data. This possibility is being explored for result-based schemes; for example, the European Forum for Nature Conservation and Pastoralism (EFNCP) lead an initiative, part funded by NRW, to develop results-based measures appropriate to commons management in Wales (Jones et al 2021). As part of this project, they trialled the use of a mobile phone app for recording habitat assessments. The advantages of using an app are that most people have a mobile phone, both data and photographs can be uploaded, and the information can be sent directly to the relevant individual/organisation in a standard format. A similar approach could be trialled for grasslands with the mobile phone app data being sent to a central coordination centre, possibly one of the Local Record Centres.

Developing national monitoring and reporting systems is relevant to all terrestrial habitats. Therefore, a new approach could be pioneered for grasslands with the intention of extending the it to other habitats if successful.

We recommend the following actions as part of the grassland programme:

- Better coordination of National High-Level Monitoring Programmes to ensure data is complementary and multifunctional. This requires cooperation between the major players i.e., Welsh Government, NRW, CEH. These datasets need to have a greater degree of scientific rigour. NRW SoNaRR team to lead.

- Development of simple monitoring protocols for the main semi-natural grassland types, including looking at self-monitoring within the SFS and the development of an app-based reporting system. This work should be coordinated by the Grasslands Team drawing on the experience of initiatives across the UK. The team would need to liaise closely with Welsh Government to ensure compatibility with the SFS.

- Identification of lead organisation/s to coordinate data collation and analysis. The Local Record Centres are probably best placed to do this if supported to do so by Welsh Government/NRW. The data would feed into future SoNaRR reporting rounds

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Appendix 1. Case Studies

Case Study 1. Anglesey Grazing Animals Partnership

From 2008 to 2014 AGAP introduced and supported grazing on Anglesey, covering 843ha of habitat (heaths, wetlands and marshy grassland, coastal slopes). A number of key species benefitted, including lesser butterfly orchid, chough, silver-studded blue butterfly and three-lobed water-crowfoot. The project offered and developed grants for capital work, advice on livestock and grazing regime, a livestock leasing scheme, outreach and engagement programme and the marketing and branding of products. On designated sites, it facilitated the uptake of Section 15 (now Section 16) Management Agreements. Vegetation management to enable grazing was an important part of the project with 45ha of scrub and bracken and 82ha of soft rush being cut on a range of sites. The project was succesful locally in restoring undermanaged land so that they could again become part of the farming system. Innovative work included close shepherding on 200ha of land at South Stack and using heathland arisings as bedding.

With help from Agrisgôp a farmer group was set up to provide training and support to help market, process and brand produce and provide training. Skills training in butchery, hygiene and marketing helped farmers to market their stock and access new profitable markets. It also operated a livestock leasing scheme to encourage farmers to try out new types of stock before commiting to purchase.

Funding for the project ended in 2014 and unfortunately, since then there has been a loss of momentum in delivery. There has been no follow up assessment so it is not possible to say how effective the project was in achieving long term positive change.

Figure 15. Cattle grazing on Anglesey Coast. Source NRW case study

What worked well?

- Grazing scheme model worked well as a way of setting out what was needed for each site.
- Site management benefited from individual and detailed plans for each site.
- Employing an experienced stockperson/farmer as project officer was a great benefit, as they were able to communicate well with farmers.

- The promotion of meat from conservation grazing has assisted with restoration of some sites.

Legacy – longevity

- A steering group of independent meat trade, conservation and Menter Môn representatives still exists but it is not clear how this continues to be linked to the positive management of sites.

What has not worked?

- Lack of financial or coordination support for continuing site management resulted in sites becoming neglected again.
- No other sites were progressed as partnership lost momentum without funded project officer.

Sources:
Abridged from NRW case study Anglesey Grazing Animals Project – Matt Sutton and Vicky Swann 2019
Further information acquired from:
Anglesey Grazing Animals Partnership | PONT (pontcymru.org)

Case Study 2. Burren LIFE and Burren Farming for Conservation Programmes

The Burren area is a pastoral landscape of 720 km^2, dominated by rich semi-natural habitats and a farmed landscape with improved agricultural grassland in the in-bye. 50% of the area is designated as Special Area of Conservation (SAC) but despite the designation many areas of habitat were deteriorating. From the outset the work has been focussed on two major issues:

Under-grazing and abandonment of the Burren, leading to a reduction in the diversity of grassland habitats and an expansion of scrub. It was recognised early on in the project, that the traditional practice of grazing cattle out on the limestone pavement during the winter, known as winterage, was key to maintaining the rich biodiversity.

Intensification of the farming system under EU agricultural improvement grants in the 1970s and 1980s had led to more intensive systems of farming with improved grasslands in the in-bye, reliance on off farm feed and loss of balance between farming and biodiversity.

With 95% of the area being in private ownership agri-environment schemes (AES) were seen as the solution. However, the 1990s AES was based on a one size fits all approach with no appropriate options or incentives for grazing the Burren limestone areas. In an attempt to address this issue, AES Burren Measures were introduced. This stopped negative impacts of farming systems but didn't change the way land was managed. The measures were prescriptive and farmers criticised it, calling it 'calendar farming'.

The challenge was to find a way of getting farmers on side and to develop an AES that works for biodiversity and for the farmers. The key principles for developing the more successful agri-environmental scheme included:

- Targeting the needs to a particular area, avoiding 'one size fits all'.
- Ground up & local in development and delivery of the scheme.
- Flexible & focussed on outputs / results rather than methods, avoiding 'calendar farming' and allowing diversity of enterprise.
- Focusing on supporting positive farming activities rather than on limiting negative ones.

Funded by European LIFE funding the AES was developed by talking, listening and learning to farmers (core group of 20 farms). BurrenLIFE enabled development of practical farm management systems to benefit the environment, the habitats and the farmers. Critical were the actions to improve grazing and these included:

- Use of grazing days rather than set dates to provide flexibility to benefit farmers and habitats.
- Infrastructure improvements to enable effective grazing.
- Development of new feeding systems such as supplements to ensure high standards of animal welfare.

- Targeted removal of scrub to restore mosaic habitats and enable grazing.

BurrenLIFE, 2005 to 2010, was in part a success but still the funding of the revised AES did not always result in improved grazing levels.

Based on findings from BurrenLIFE the Burren Farming for Conservation Programme (BFCP) was founded in 2010 with the objectives of ensuring the sustainable agricultural management of high nature value farmland in the Burren. The new scheme trialled a different approach with payments for results, focussed on:
Payments for actions that improved habitat condition and enabled management;
Payment for results which made conservation a product, awarding better management with higher payments.

The approach is farmer centred and farmer led, importantly it gave the farmers “freedom to farm” and provided flexibility for individual farmers. The farmer decides their own management strategy and chooses actions for each year. This is delivered by a simple annual farm plan drawn up by the farmer and the adviser.

A comprehensive system of scoring both the lowland fields and the Burren Winterage was developed. This takes into account current management and existing and potential problems and the assessments were carried out by trained advisers annually.

The scheme has now expanded to cover 331 farms, 23,000 ha of land. One of the key advantages of the BFCP approach is that there is a clear value to the farmers of good condition habitats. Paying for results provides ‘carrot not the stick approach’ with clear financial incentives and support for the farmers. The positive impacts of the scheme were proven by simple monitoring approach, showing an increase in high scoring land of about 25% over a 5-year period.

Attitudes have also been changed across the community to the value of the Burren and the role of farming by the work of the BurrenBeo Trust. This aims to connect all of the community to the area and generate a sense of pride in heritage and landscape. For example, it runs educational events and festivals including the Burren Winterage Festival, supports research into best practice for landscape management and disseminates knowledge and provides learning opportunities regionally, nationally and internationally.

The BFCP is seen as so successful in Ireland that the approach is being extended to the whole of the western seaboard.

Figure 16. Gortleka Farm, Burren. Source Brendan Dunford

What has worked or is working well?

- Funding (LIFE and then Government Department) has provided continuity over a long period of dedicated and knowledgeable staff.
- Over the years local pride and ownership of the scheme and of the Burren has been greatly enhanced.
- The payments for results/outcomes puts a value on the condition of habitats which has then been an effective tool for improving land management.
- The AES payments are now fair, transparent and effective at delivering better habitat management.
- There has been good knowledge transfer both locally through events and networking and more widely through links into the High nature Value farming Network.

Legacy – longevity

- The funding by LIFE and the Department of Food, Agriculture and the Marine has provided long term support for the work.
- Dedicated and knowledgeable staff have remained in post for over 20 years, providing continuity and in-depth knowledge and understanding of the environment and farming systems.

What has not worked?

- There is still some cynicism from the farmers regarding AES.
- There is concern for the future with the ageing population and lack of young farmers.

Sources:
http://burrenprogramme.com/
Pers comm: Dr. Brendan Dunford, Manager, Burren Programme

Case Study 3. Caeau Mynydd Mawr Marsh Fritillary Project

The initial Mynydd Mawr Marsh Fritillary Project Partnership between Butterfly Conservation Wales (BCW) and the Countryside Council for Wales (CCW) ran from 2004 to March 2010. It focussed on the Cross Hands area, Carmarthenshire, one of the last UK strongholds of the butterfly. The project set out to tackle two key issues affecting the habitat: poor management, such as over and under grazing; and the loss of habitat to development. A project officer was employed and management agreements were offered to all owners and occupiers of suitable or potential marsh fritillary habitat. Capital works, including fencing and scrub clearance, were funded by the project. In summary the project resulted in:

- 5 owners of 54ha signed up to agreements.
- Owners of another 3 SSSIs, 15ha, Section 15 agreements and/or managed by the Project Officer.
- 2347m of fencing, 5.5ha of scrub clearance and 8.7ha of *Molinia* cutting.

Potential conflicts between development and conservation were highlighted by this project. Development pressures and high land prices discouraged landowners from entering agreements. As a result, Carmarthenshire County Council (CCC) then took a strategic approach. Supplementary Planning Guidance (SPG), to protect and enhance existing and potential marsh fritillary habitat, was produced. This defined 5600ha to the west of Ammanford within which any development would be required to take account of the needs of the butterfly. Developers have to enter Section 106 agreements with CCC and a financial levy is applied to all developments.

The second phase of the Caeau Mynydd Mawr project, which stems from this SPG, is delivered by CCC. It is managed by a dedicated project officer, funded entirely by developer contributions. The management and monitoring of the land acquired and managed under the SPG is carried out by the project officer and a steering group guides the project. In summary:

- Financial contributions from developers are used to fund management agreements and works on project sites.
- 26 sites, 130ha in the project area, are currently managed for the marsh fritillary.
- Sites range from small-holdings to fields on large commercial farms.
- Annual management agreement payments to owners are comparable with Welsh Government agri-environment schemes.
- Payments are made for capital works such as fencing, scrub clearance and mowing.
- Grassland enhancement works have been carried out, including plug planting of devil's bit scabious, and turf-translocation.
- The project is recognised as an innovative approach to offsetting the pressures of development on sensitive species and habitats, and in 2018 won the national RTPI award for planning for the natural environment.

The majority of site owners are retired and have no independent means to manage the land. With positive relationships being built up over time they welcome the support that the project has been able to provide. Two of the sites are on commercial dairy farms and grazing here with the herds' heifers has been successful. With the development of tourism as part of the farm business, the dairy farms now see the marsh fritillary habitat on the farm as an asset.

Figure 17. Funded work for the marsh fritillary butterfly. Source NRW case study



What worked well?

- Successful restoration and subsequent grazing of 130ha of sites.
- The long-term funding of project officer through development levy.
- Continuity of employment of project officer has enabled the development of good relationships with landowners and understanding of sites.
- Simple approach to 'informal' monitoring and provision of feedback to owners has helped to build trust and understanding.
- Flexibility in approach and willingness to, for example, graze sites through the winter has benefitted site condition and helped to build positive relationships.

Legacy – longevity

- Project Officer funded by financial levy from developers providing continuity of the work.

What has not worked?

- With the exception of the sites on the dairy farms, where they are now valued as part of the tourism offer, all of the sites are very vulnerable. If funding of the project officer and management ceased, it is likely that the sites would again be abandoned and grazing would cease.

Sources:
Abridged from NRW case study Caeau Mynydd Mawr – Matt Sutton and Vicky Swann 2019
Further information acquired from:
https://www.carmarthenshire.gov.wales/home/council-services/planning/biodiversity/marsh-fritillary-project/
Pers comm: Amanda Evans Project Officer

Case Study 4. Coronation Meadows

The Coronation Meadows Project ran from 2014 – 2016, to implement HRH The Prince of Wales vision to create a least one new meadow in every county in the UK. It celebrated the 60th Anniversary of the Coronation by designating one of the best surviving meadows in each county as a "Coronation Meadow". The project was led by a partnership of The Wildlife Trusts, Plantlife and the Rare Breed Survival Trust. It secured a Biffa Award grant of just over £1 million to create a new meadow in each county using the Coronation Meadow as the seed source. A programme of public engagement was run alongside the work, and a series of workshops resulted in the production of some detailed technical advice notes on meadow restoration techniques.

The Coronation Meadows Project was an ambitious, UK-wide project to celebrate wildflower meadows and create new ones. With HRH Prince Charles as patron, the project had a high-profile, and achieved its aim of re-creating at least one meadow in each county.

Figure 18 Plas Newydd Coronation Meadows, Gwynedd. Source Mike Alexander

Without ongoing post-project resources and support, not all gains have been maintained, but attempts are currently underway to build on successes through follow-on projects. The synthesis and dissemination of best-practice meadow restoration advice was a significant and successful feature of the project. Ongoing support to receptor sites was delivered locally on an ad-hoc basis. There have been attempts to monitor the development of some sites.

What worked well?

- Successfully raised the profile of hay meadows and grasslands.
- Created 90 new 'meadows', 405 ha, at least one in each county using seed/green hay from each of the County Coronation Meadows.
- Produced good best practice guides for meadow creation.
- Led to wider flower-rich grassland projects, Saving Our Magnificent Meadows.

Legacy – longevity

- Difficult to assess. The high profile of the work must have had an impact but there is little information on the current state of the meadows covered by the Project.

What has not worked?

- Lack of post project support led to reversion of poor management of some meadows, e.g., Plas Newydd orchid meadow (Anglesey).
- Designation as a Coronation Meadow didn't necessarily transform management of meadows.

Sources:
Abridged from NRW case study Coronation Meadows – Matt Sutton and Vicky Swann 2019
Further information acquired from: http://coronationmeadows.org.uk/

Case Study 5. Elan Valley Meadows and Elan LINKS Project

Elan Valley Meadows Research – As a result of acidification and reduction in nutrient levels the yields of hay in the upland meadows had declined and hay was no longer being made. Sward composition of the meadows was also changing in favour of more acid tolerant species. A 10-year meadow management research programme, led by the Elan Valley Trust, was funded by CCW/NRW (Hayes and Lowther 2014). The research concluded that yields of hay could be improved by light applications of lime and manure without significant impacts on floristic diversity. The results formed the basis for site-specific management advice to help conserve the regionally-distinctive meadows. A hay-making regime was re-established on some fields which had been pasture in recent years and some successful meadow restoration work was also carried out.

Figure 19. Elan Meadows Workshop with Mike Hayes 2016

Elan LINKS Project - A 5-year HLF funded (£3.5m) landscape partnership scheme began in 2018 covering all habitats in the Elan valley area. There are four themes to the project: Celebrating Heritage; Enjoying Elan; Experience and Education and Enhancing Nature and Wildlife. The work on hay meadows aims to work with farmers to make sure that the meadows continue to flourish, learning from the research and recognising that applications of lime and manure are needed to enable the meadow communities to thrive and produce a viable crop of hay. Over the five years, the project aims to deliver improved management of meadows, in-bye field management plans, training in meadow management and facilitate meadow demonstration and volunteer days.

Rhos hay production is a traditional practice to the Elan Valley area which is thought to be beneficial for nature and may provide economic benefits to the farming system. The practice has largely died out and the project aims to restore rhos pasture, run farm trials and facilitate training in rhos hay skills.

The meadows are part of the in-bye land which covers 700ha, 3.5% of the project area. The project recognises the need for a strategic approach to the management of all

the in-bye land to benefit nature and farming, and plans **to develop shared objectives for farming and nature conservation for each farm.**

What worked well?

- Elan Valley Meadows research demonstrated successful meadow management, raised awareness and engaged with some farmers.
- With outcomes based on rigorous experimental design and monitoring the work can be used for other upland meadow areas where there are management issues.

Legacy – longevity

The outcomes of the research, the need for manure and lime to maintain upland meadows, is a positive step for sustainable management of hay meadows in a farming system.

What has not worked?

Small scale and limited impact for overall grassland resilience.

Sources:

Hayes MJ Lowther RA. 2014. Conservation management of species-rich grasslands in the Elan Valley, Radnorshire. Natural Resources Wales report
NRW case study Elan Valley Grassland Project – Matt Sutton and Vicky Swann 2019
Further information acquired from: https://www.elanvalley.org.uk/about/elan-links

Case Study 6. Gwendraeth Grasslands Project

The Gwendraeth Grasslands Project, in south Carmarthenshire, ran from 2011 to 2013. It was delivered by a partnership of the Wildlife Trust of South and West Wales (WTSWW), National Botanic Garden of Wales (NBGW), the Grasslands Trust and Pori Natur a Threftadaeth (PONT). The project was funded by WREN, with third party contributions from the Countryside Council for Wales (CCW) and Environment Agency Wales (EAW).

The project addressed the neglect of Purple Moor-grass and Rush Pasture and other wet habitats. The work was delivered by existing staff resources in partner organisations. Improved management was achieved on 6 sites, 100ha of grassland. Action to enable grazing infrastructure and the removal of scrub and rank vegetation from sites was funded and facilitated by the project. Hardy cattle were key to delivering appropriate grazing and a number of livestock were sourced and leased by PONT to private landowners, enabling the reintroduction of grazing. The NBGW made available their herd of 50 Welsh Black cattle to graze some of the sites. Surveys were carried out of all sites and a conservation grazing plan was drawn up. Monitoring was set up on all sites but resources haven't enabled continuation of this programme.

Figure 20. Restored species-rich grassland, Gwendraeth Grasslands

What has worked or is working well?

- The partnership approach, sharing knowledge, skills and machinery, across multiple sites at landscape scale, proved successful.
- The stock leasing element of the project was successful, supporting landowners to acquire appropriate cattle for grazing of their sites.

Legacy – longevity

- The benefits of the project continued after the end of the funded project on some of the land, particularly where livestock had been leased to land owners.

- The project raised the profile of the habitat needs with partner organisations and closer working relationship were fostered by the project. This led to long term beneficial changes in management of rhos pastures in the area.

What has not worked?

- The project recognised that a more complete written partnership agreement, setting out liabilities and responsibilities, would have been beneficial.
- With respect to site works, the project found that unpredictable weather patterns made some planned works more difficult, highlighting the need for flexibility in delivery.
- Funders were unwilling to grant-aid the purchase of machinery, preferring to see works delivered by contractors.
- Since the completion of the project there has been little capacity in the partner organisations to deliver further work on rhos pastures and monitoring of sites is on an 'ad hoc' basis.

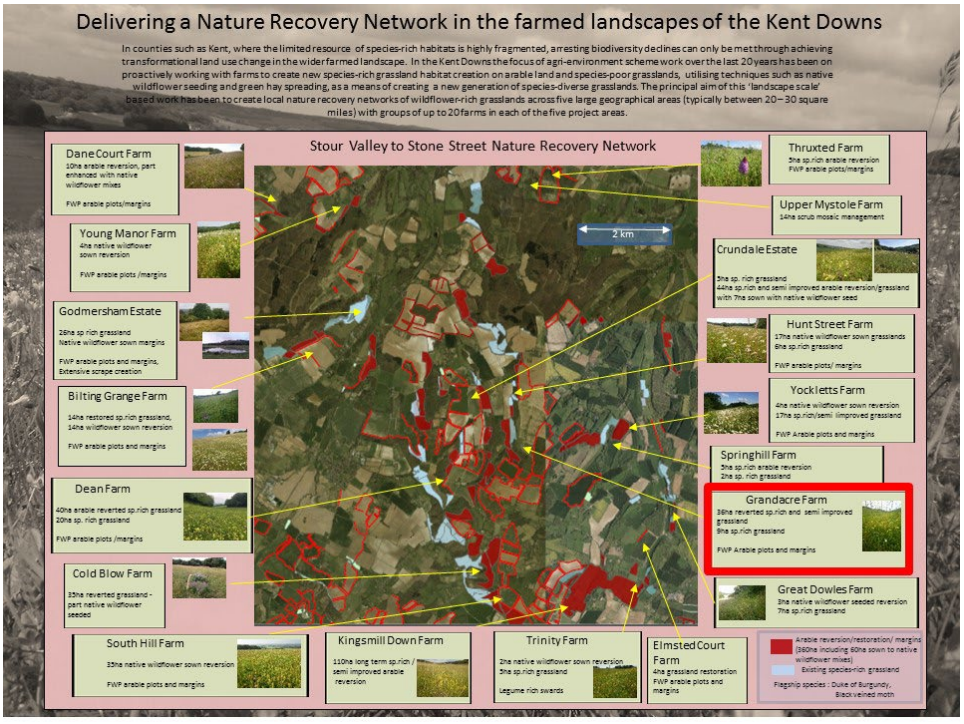
Sources:
Abridged from NRW case study Gwendraeth Grassland Project – Matt Sutton and Vicky Swann 2019
https://www.welshwildlife.org/wp-content/uploads/2014/07/Gwendraeth-Grasslands-Project-Report-FINAL.pdf
Further information acquired from: Jan Sherry PONT pers comm

Case Study 7. Kent Downs Grassland Project

Established in 1999, the Kent Downs Grassland Project is focused on the creation of landscape-scale networks of wildflower-rich grasslands to address declines in biodiversity, building flower and seed abundance at scale. Within the 4 project areas, each 50 to 80 km^2, only 2% of the land area is designated and at the outset it was recognised that to deliver change at landscape scale a radical shift in land-use would be needed. This would require significant resources to create species rich grasslands in a farmed landscape and a high level of cooperation from a diversity of farmers and landowners.

Within each project area there are groups of 12 to 25 farms. The work is led by Natural England (NE) advisers, working one-to-one with farms over long time periods to build close working relationships. Continuity of schemes and advisers has been crucial. Using agri-environment schemes, large scale conversion of arable and species poor grasslands over a long time-scale (spanning multiple scheme 'lifetimes') has been possible. The annual payments for the standard set of options, are based partly on an income-foregone basis and partly on an incentive-based approach. In addition, one-off capital payments are available through the schemes which can provide grant contributions for infrastructure items such as new fencing, water troughs and gates. The capital grants are also able to fully fund the purchase of native-provenance wildflower seed mixes.

Figure 21. Delivering a Nature Recovery Network in the Farmed Landscape of the Kent Downs, example from the Stour Valley area. Source: Dan Tuson, Natural England



Key to the success of the work has been the ability of advisers to visit farms regularly and provide 1 to 1 advice, building up long term relationships with farmers and develop intimate

knowledge of each farm and its scheme. The advisers are able to steer and drive change with a gradual process of negotiation, tailored to each farm. NE advisers are able to work with the farmers to amend or tailor the standard prescriptions in the higher tier scheme with an approach based on individual farm conditions rather than prescriptions. The ability to vary and change management regimes is critical when dealing with the vagaries of growing seasons, encroachment from undesirable plants, and the progression of grasslands to new phases. Patience, compromise and flexibility are critical to the success of the model.

Figure 22. Successful grassland creation in the Stour Valley. Source: Dan Tuson

Across the four areas, a total of 700 ha of arable land has been reverted to wildflower grasslands, and an additional 630 ha of grasslands are under restoration. Monitoring of key species is beginning to show positive response to the changes. For example, Duke of Burgundy butterfly and black-veined moth, are now colonising arable reversion grasslands, and both species are showing upward trends in populations. Bats (e.g., serotine, myotis species and noctule) are very active across many of the new grasslands, giving a good indication of insect abundance. Farmland birds such as corn bunting have also established breeding territories in the new grassland areas, again taking advantage of the insect-rich habitats.

There is also an important social/behavioural outcome that the proactive approach of the project is able to demonstrate. Farmer ownership of the positive results and appreciation of the grasslands has been enhanced where change is rapid and visible (grasslands full of flowers and insects as a result of green hay or other seeding). The farmers are able to understand the value of their work when there is positive feedback and flower rich grasslands, helping them to see the grasslands as an asset to the farm. Farms that are rewarded with positive feedback are more inclined to remain engaged when they feel they are genuinely contributing to positive environmental gain.

There is no detailed work on the impacts of the project on farming systems but there are some useful insights which span both positive and negative, and emphasise that there is no one route or answer to achieving this type of success at scale. Some farms, for example, have welcomed their need to reduce the numbers of stock to fit in with the more extensive grazing regimes. Others like the increased availability of autumn/winter grazing. But equally, some farms struggle with the reduced hay quality and it can be an annual ‘headache’ for the project officer to find people to cut the hay on some farms.

In summary the key ingredients of this successful project are:

- Adviser led steer and prioritisation of species-diverse grassland across the landscape as the main driver for a scheme;
- Building of long term one to one relationships over multiple decades between adviser and farmer in order to foster a strong bond of trust and ensure long term continuity of commitment;
- A focus on a clear, unwavering, long-term vision for a discrete geographical area that aspires to engage with ALL the farms in that area irrespective of existing habitat assets, size and type;
- An investment of time and proactive approach in driving and pushing forward grassland creation and restoration projects to make them happen;
- Being willing to compromise and offer flexibility with management e.g., accept that periodic /short term suboptimal management is unavoidable in order to achieve a long-term gain in the next field;
- Ensuring the approach to targeting is 'opportunity-driven' rather than 'computer-led /targeting' driven (taking full advantage of opportunities to create habitat on farms/sites that may arise in seemingly suboptimal locations).

What has worked or is working well?

- Continuity of 1 to 1 advice, support and steer of farmers in the project areas has delivered on all aspects of resilience.
- Long term approach has paid off in terms of delivery.
- Flower rich grassland creation at scale with positive response of species, butterflies, moths and bats.
- Creation of a more resilient network of semi-natural grassland.

Legacy – longevity

- Long term approach has been possible with NE providing continuity of advice and support of adviser.
- Funded by successive agri-environment schemes has provided long term commitment to the work.
- Some evidence of changing farmer perception to semi-natural grasslands which may ensure more longevity beyond the life time of schemes.

What has not worked?

- Not all of the farmers see the value of having flower rich grasslands on their farms. For example, on some farms taking of the hay crop is left to the project officer to organise. Without change in attitude the long term resilience of grasslands on these farms is very much dependent on the continued funding of the project officer.

Sources:

D. Tuson - Delivering 'landscape-scale' conservation in the farmed environment: 20 years of building Nature Recovery Networks in the Kent Downs - the case for the 1 -1 farm advice model. 2019

D. Tuson – Delivering Landscape Scale Conservation in the Farmed Environment, Conservation Land Management, Autumn 19, Volume 17, No. 3.

Pers comm: Dan Tuson

NRW Case Study – Kent Downs Grassland Project – Matt Sutton and Vicky Swann 2019

Case Study 8. Llŷn Landscape Partnership Farming for the Future, Payments for Results Trial

The Llŷn Landscape Partnership is made up of conservation organisations and farmers unions, and is managed by Gwynedd Council. There have been a series of partnership projects over the last 20 years. The partnership is currently running a payment for outcomes trial which aims to deliver better outcomes for nature than current agri-environment models and to show that farms are more productive economically when they farm in a nature friendly way. The trial differs from typical agri-environment models in that the payments are based on measurable outcomes rather than on delivery of prescriptions. Overall, the approach is based on empowering and motivating farmers to deliver more for nature on their farms.

The project is taking a whole farm approach and is focussed on delivering 'nature-friendly farming'. The project is led by the National Trust and focused on three tenanted farms. The focus of habitat work is to improve the condition of existing habitats, building on work of previous projects, restore and create new habitats and increase connectivity between habitats. The habitat outcomes and scoring system have been developed by the Llŷn Landscape Partnership, led by PONT. The payment system takes into account positive and negative indicator species and features related to each habitat. More positive species and features will result in a higher score and therefore a higher payment. Critically, the farmers will decide the actions they undertake, learn from experience and have more control over the condition of their land and the resultant payment.

Figure 23. Hay Meadow Creation Llŷn Payment for Outcomes. Source PONT

On each of the three farms there is a mixture of habitat enhancement and habitat creation, necessitating changes to the farming systems. Key work includes broadening the coastal corridor and extending the network of semi-natural grassland by creating significant areas of species-rich meadow and coastal grassland.

The project recognises that improving ecological knowledge and plant identification skills amongst farmers is a key issue. If farmers are to lead the transformation in the perception, attitude and approach to semi-natural grasslands they need the tools and support to make the appropriate changes in their farming practices. Assistance with this, for example in the form of pictorial guides, is being provided for monitoring progress and the farmers have easy access to ecological support through the National Trust and PONT. This includes

twice yearly farm walks in summer and winter to assess progress and discuss potential changes in management.

The payments for results trial is investigating the economics of moving towards a nature friendly farming system and this has helped to strengthen Welsh Government's resolve towards support for 'nature friendly farming', and its interest in the 'Maximum Sustainable Output' model as presented by NT/RPSB/Wildlife Trusts in the 'Less is More' report (*Clark and Scanlon 2019*). The originators of this model, Nethergill Consulting, are providing consultancy services to the project.

What has worked or is working well?

- The farmers are very engaged in the decision-making process and are empowered to make active changes in their farming system.
- The farmers have provided very positive feedback in the attitudinal survey as they see this approach as more helpful and supportive than previous agri-environment schemes. In particular, they are clearer on what they are trying to deliver on the ground.
- Significant grassland enhancement, restoration and creation has taken place on two of the three farms.

Legacy – longevity

As a trial, the project has limited longevity but the aim is to seek funding to continue and broaden the project and to feed the results into the development of Welsh Government's Sustainable Farming Scheme.

What has not worked?

- The self-monitoring of outcomes by the farmers has not been as successful as hoped. The methodology needs to be simplified and further training provided. Ideally self monitoring could be undertaken using a phone App which would incorporate photos of each land parcel.
- Progress is not even across the farms and slower improvements have been seen on one farm.

Sources:

Jan Sherry PONT pers comm
Godber A. and J. Sherry. (2019). Payment for Outcomes Trial 2019-2022: Farmer Agreement Handbook. National Trust Internal Document
NRW case study Farming for the Future of the Llŷn Peninsula – Matt Sutton and Vicky Swann 2019

Case Study 9. Meadows Groups

Meadows Groups are varied in their make-up and focus but all provide a network for owners of and people interested in meadows and flower rich grasslands. They can include farmers, small-holders, homeowners with larger gardens and community groups. Some groups, such as the **Monmouthshire Meadows Group (MMG)**, were set up to reach and appeal to owners of meadows that are not able to access agri-environment scheme payments. Meadows Groups are often grass-roots initiatives, either run by dedicated people within the group or sometimes they have been set up and run by a funded facilitator. They all tend to have an organising committee that runs events and activities to support meadow owners with management and enhancement of their grasslands, creation of new meadows and sometimes provide services such as surveys. The main purpose of most meadows groups is to share knowledge and skills in making and managing meadows but some groups have purposefully been set up to campaign for more biodiversity and better wildlife management in their locality.

The Plant Life website page (Plantlife Meadows | Meadows groups) lists 14 Meadows Groups in England and Wales, 7 of these are in Wales. Plantlife is working with these groups, looking at the facilitation needs of each group.

One of the longest standing groups is the **Monmouthshire Meadows Group** (MMG) which has been in existence since 2003. The group is focussed on helping members manage their meadows. The range of services include, ecological surveys, management plans and practical support with, for example, links to contractors and owners of livestock. The work of the group now covers approximately 200 grassland sites, 242 ha, 10% of the semi-natural grassland resource in Monmouthshire. Since formation, the group has received funding and support from a variety of organisations, including the Heritage Lottery Fund, NRW and PONT. Running costs are also supported by membership subscriptions, fundraising events and sales of publications.

The small and fragmented nature of sites poses challenges in securing cutting and grazing management. The long-term security of such sites may be vulnerable to changes of ownership or circumstance. Many of the sites are outside of the spheres of statutory site conservation and agri-environment schemes so the support of the group is critical.

The Herefordshire Meadows Group (HMG) was set up in 2015 and it is now a successful network of meadow managers, united by an interest in restoring, creating and conserving flower rich grasslands and promoting their value as part of a productive farm business. The group attracts both farmers and owners of smaller grassland areas and now has 400 farmers and owners in its network. It is now supported by Natural England as a Facilitation Fund Group. The group holds events and discussions on how to manage, create and restore meadows to benefit wildlife, soil and water quality, historic features, natural flood management and livestock farming businesses. It also acts as a forum, building up a network of local people with skills in plant identification, management advice and contracting services for grassland management.

What has worked or is working well?

- Meadows groups can be very successful in providing an active network, engaging with and connecting owners. For some groups this is focussed on owners of small

grassland sites but the Herefordshire Group has shown that it can be very beneficial to include farmers in the network.
- The advice and support of the groups has resulted in better management of meadows and, for example, the Monmouthshire Meadows Group has helped to achieve good management across a significant area.

Legacy – longevity
- The MMG is member led so it is self-sustaining and not dependent on a project. It has been running since 2005 and continues to flourish.
- The HMG is funded by the NE Facilitation Fund.

What has not worked?
- For the MMG, getting the right management in place has been a challenge with issues associated with logisitcs, machinery and livestock.
- It has been difficult to maintain groups particularly those which are not grass roots.

Sources:
Plantlife Meadows | Meadows groups
https://www.herefordshiremeadows.org.uk/
NRW case study Monmouthshire Meadows – Matt Sutton and Vicky Swann 2019
Monmouthshire Meadows Group – Conserving and Restoring Wildflower-rich Grasslands in Monmouthshire

Case Study 10. Conserving the Park –Gwarchod y Parc. Pembrokeshire Coast National Park

The Conserving the Park project developed from the Conserving the Coastal Slopes project established in 1999 and funded by the European Agricultural Guidance and Guarantee Fund. This project specifically focused on grassland and heathland habitats on the coastal slope. In 2002 the Conserving the Park project was initiated and broadened to include other parts of the park and other habitats and species, including lowland meadows and marshy grasslands. The scheme is now core funded by the National Park Authority and therefore is a long-term approach not limited by project time-scales. The scheme is a part-farm approach open to anyone who wishes to maximise the wildlife value of their land. This includes agricultural holdings and non-agricultural land. Around 12000 hectares of land were in the scheme in 2018.

Julie Garlick stated
“The beauty of CTP has been that it has developed over the years, to meet whatever needs/challenges/opportunities have arisen as the years have gone by; it’s very flexible and ever-evolving, so we’ve been able to offer complete tailoring to individual sites, which has been one of the strongest features of the scheme. A ready-made scheme with no chance of changing it in coming years is a bit strait-jacketty! Participants have expressed their dissatisfaction with the one-size-fits-all approach of the national schemes; they can see it doesn’t always work on their land but they feel helpless to change it – their only option sometimes is to leave that scheme.”

The scheme has a flexible toolkit approach as shown in the Table 10. Each site is assessed and the appropriate tool selected to deliver the desired wildlife benefits.

Table 14. Gwarchod y Parc Toolkit

Tool	**Problem addressed**
Advice	There are few places for landowners to turn for free land management advice on undesignated land. Once a project is up and running, advice is always easily available from project staff to keep things on track.
Practical assistance	Some traditional skills have largely died out, such as controlled winter burning of gorse and heather, so this service is offered by National Park staff through the scheme. Where it is difficult to find contractors to do things like bracken rolling or scrub cutting, NP staff can carry this out or organise specialist contractors. Some jobs are too small for contractors, such as patching up fences, but National Park wardens can help.
Access to volunteers	Lack of manpower on farms to tackle large or time-consuming jobs such as hedge-planting and scrub cutting

Grants	To tackle the expensive jobs such as stock-proofing sites. Available for fencing, gates, water supplies and other required infrastructure.
Management agreements (area payments)	As an incentive and as a way of making a new management regime pay its way.
Sourcing grazing animals	Many holdings do not have suitable stock for conservation grazing
Special projects	To tackle expensive projects for particular habitats/species, such as pond/scrape creation, barn owl boxes, hedgerow creation/restoration.
Access to experts	Lack of knowledge regarding special plants and animals. The NP has good links with local wildlife experts who can help locate and identify special species, as well as put them into geographical context and advise on management
Hand-holding	Many landowners appreciate continued staff involvement to assess how things are going, to help tackle problems that crop up and to offer additional help along the way if required.

The project operates on the principles of:

Simplicity - minimum of paperwork for farmers
Promptness – agreements drawn up rapidly, prompt payments, quick response times to call-outs for assistance
Flexibility – rigid, standardised prescriptions (e.g., stocking rates) are avoided in favour of site-specific proposals that can be adjusted

What has worked or is working well?

- The scheme has been successful in returning previously neglected or abandoned land to being managed as part of the working farm
- The scheme has helped to improve the condition of SSSIs where NRW have not had the staff or resources to do so.
- As well as delivering benefits for wildlife, the scheme has had a positive impact on archaeology, access and recreation.
- Advice – people want to see someone; they want someone to walk their land with them and give advice and then return to see how things are going/be available for further advice at the end of the phone.
- The toolkit approach – the toolkit contains things other schemes do not! Practical assistance from our warden or volunteer teams. The grazing animals programme is a key tool, without which it would be hard to see how the programme could achieve as there are a lot of landowners who have no stock.
- Core funding – the opportunity to be involved with sites for the long term because it is core and not grant funded. Relationships are built and outcomes are maintained for the long term.
- Quick response
- Low paperwork
- Part farm – this is seen as an advantage to allow more targeted work to be done
- Monitoring is down to professional ecological judgement (i.e., you won't be penalised if your sward is too short!). Monitoring may be undertaken with the landowner to help build confidence in the process.

Legacy – longevity?

- This is a long-term approach with core funding which is a recognition of the importance of the scheme in meeting the Authority's primary purpose to conserve and enhance its natural beauty, wildlife and cultural heritage.

What has not worked?

- Budgets and staff time are the key limitations the National Park have said they could easily double or triple their operation with a commensurate increase in budget.
- The intervention rates (£120 per hectare) are quite low. For example, in the original scheme it was envisaged the scheme would target the 'one field back' from the coast. There are some examples of this happening but overall, the incentive has not proved attractive.
- The scheme is intentionally fairly informal which usually works well but can cause issue where land changes hands or on the rare occasion things don't quite go to plan.
- Finding people with the right equipment to cut hay meadows has been tricky. The hay is not always of high quality and sometime with wet summers the hay has not been dried sufficiently and is not useable. Clearly it would be preferable to demonstrate the economic value of the hay meadows by producing a high value, useable crop.

Sources:

Pembrokeshire Coast National Park. 15 years of Gwarchod y Parc
Conserving the Park. A niche scheme promoting traditional land management.
https://www.pembrokeshirecoast.wales/conservation/conserving-the-park/

Case Study 11. Saving Our Magnificent Meadows (SOMM)

Inspired by the success of the Coronations Meadows Project, Plantlife led the UK wide SOMM project from 2014 to 2017, funded by the Heritage Lottery Fund (£3m). The project vision was to reverse the fortunes of wildflower meadows, grasslands and their associated wildlife through a step-change in the nation's understanding and appreciation of wildflower meadows. The work focussed on nine areas of meadow and other grassland enhancement, creation and improvement in connectivity. A key part of the approach was to engage with communities to increase awareness and understanding of meadows and provide opportunities for people all over the UK to visit, enjoy and celebrate meadows and grasslands heritage. The achievements included:

- 3,460 ha of grasslands maintained, restored and expanded;
- Almost 900 landowners and farmers received training, workshops, advice and support;
- Through direct conservation work and by supporting and advising farmers and landowners, enhanced over 9,000 ha of meadow and grassland.

With partner organisations it trialled new management techniques and the lessons learnt will be used to improve all grassland conservation in future. A range of resources were provided, including monitoring guidance, identification cards and advice on how to create new meadows.

There is some information on the positive impacts that management had on some of the sites but once the project ceased to operate in 2017 it was been difficult to assess the long-term benefits to the resource. Within Wales there is some evidence that since the project ended some of the positive work on some of the sites has not continued. Though an impressive 9,000 ha of meadow and other grasslands were enhanced by the project across the UK it is not known how much of this is flourishing today. There is no figure available for Wales.

However, SOMM was undoubtedly very successful in raising the profile of flower rich grasslands across the UK and it ran an excellent series of local and national events. It reached millions of people all over the UK, including many new audiences. The website and Facebook page provided national focal points to promote events and sustain people's interest with project updates and new resources. National Meadows Day, which has continued beyond the lifetime of the project, has been a huge success; a national celebration of meadows that encourages people to enjoy meadows at their peak. The number of public events grew each year, with more than 125 events in 2017, including 126 family learning activities with over 9000 people and 139 guided walks and tours. The project also increased the accessibility of meadows and grasslands by, for example, creating new nature trails, producing information boards, leaflets, guides and films. A Cultural Connections programme explored the links between meadows, ecology and the

arts through a range of creative events, including storytelling in Northumberland and Ulster, and music and dance in Medway Valley.

The programme of volunteering was also a great success and reached all age groups. The time given by volunteers was calculated to be more than 4,500 working days or one person working full time for 20 years. This fantastic level of engagement enabled SOMM to carry out practical conservation and run public events or other activities. Engaging schoolchildren and teachers were a vital element of the project, leading to more outdoor learning opportunities and inspiring a new generation to connect to nature. More than 1000 school pupils took part in engagement activities. 244 training courses were run by the project, focusing on land and habitat management, rural skills and heritage conservation, and participation and learning activities.

SOMM was the single biggest drive to reverse the decline of our meadows, grasslands and their wildlife to date. Though it is not clear if all of the positive changes in the management of grasslands were sustained beyond the lifetime of the project, it had a positive impact on understanding of grasslands across the UK and brought focus to the issues facing grasslands. It recognised that if the vision is be attained in the long term, new ways need to be found to inspire many more landowners and managers.

What has worked or is working well?

- Raising the profile of meadows and other grasslands and increasing understanding of the issues affecting them.
- The programme of engagement was highly successful and reached many new audiences. It increased accessibility to meadows.
- During the project period it enhanced 9,000 ha of grassland.
- Great set of resources and on-line guidance and advice developed.

Legacy – longevity?

- The successful engagement programme will have undoubtedly had a long-term impact in terms of the perceptions and understanding of meadows amongst NGOs and the general public.
- The annual celebration of meadows, National Meadows Day, has continued beyond the lifetime of the project.
- The resources, advice and guidance are available on line and likely to be widely used.
- It is difficult to assess the long-term impact on grassland resilience as that information is not available.

What has not worked?

- Impacts on the sustainable management of meadows and the perceptions amongst the farming community are unclear.
- There is some evidence that positive changes locally have not been sustained.

Sources*:*
http://magnificentmeadows.org.uk/
SOMM Evaluation Report 2017 Plantlife

Case Study 12 Stepping Stones Project, Whole Farm Planning. DEFRA Test and Trial Shropshire

Stepping Stones is a partnership project delivered by the National Trust, the Shropshire Hills AONB Partnership and Natural England with support and guidance from organisations including the Shropshire Wildlife Trust, CLA and NFU and from landowners, notably the Upper Onny Farmers Group (UOFG). The project covers an area of 220km² of the Shropshire Hills Area of Outstanding Natural Beauty (AONB). Most of the area can be described as marginal upland including several prominent hills such as Long Mynd and the Stiperstones with intervening valleys, steep-sided hill slopes and a number of lower-lying hills.

The project has a long-term vision to work with landowners and their local communities to create a healthy natural environment, to restore the landscape character and increase wildlife that are characteristic of the Shropshire Hills. The project aims to increase and connect wildlife habitats by strengthening and creating ‘stepping stones’ and corridors between the Long Mynd and the Stiperstones, creating and linking areas of heathland, flower-rich meadows and broadleaved woodlands via a network of wildlife-rich hedgerows, road verges, hillsides and wetlands. It has been recognised at the outset that the success of the project will depend on working closely with farmers to manage the landscape to deliver the environmental vision whilst sustaining a profitable farm business.

Working with a group of local farmers, the Upper Onny Farmers Group (UOFG), a DEFRA ELM Test and Trial, has been set up. Phase 1, 2019 to 2020, focused on the development of a whole farm plan methodology. The primary objective was to develop an approach to help farmers make informed decisions about how to enhance the natural capital of their farms and increase the delivery of public goods in ways that maintain profitable farm businesses. The methodology was tested at five farms. Phase 2, 2020 to 2021, set out to trial the whole farm plan methodology by engaging a different external farm and environment consultancy to work with a different group of five farmers.

As well as the Whole Farm Plans (WFP) the UOFG worked with the facilitator and advisers to deliver 6 farmer workshops and 2 farm-based demonstrations. These focussed on building farmer understanding of new terminology such as natural assets, natural capital, and public goods and to showcase examples of how these are integrated into the local farm businesses.

An important natural asset within the Project area are flower-rich grasslands. The trial has highlighted the importance of flower-rich hay meadows to the local environment and also as an asset to the farm business and the UOFG are keen to explore the opportunities for restoring and creating flower-rich hay meadows. One group of 3 farmers have made a successful bid to Severn Trent Water for meadow restoration. To date, 21ha of hay meadow have been created. There is an increasing interest by the farmers in environmental improvement, for example, one of the farmers made a successful application to Farming in Protected Landscapes Fund for hedgerow creation and water course protection.

The learning points from the work to date include:

- The WFP methodology provides a proven mechanism for the preparation of ELM Land Management Plans.
- The strength of WFPs is founded on a shared understanding of the farm business and environmental priorities between the farmer, a farm business and an environment advisor. The practice of the farmer and the advisors sharing information, discussing opportunities, and checking for understanding is vital for successful WFP outcomes.
- Farmer groups supported by a coordinator/facilitator function as a valuable farmer support network. They provide an important forum for knowledge exchange, sense-checking, challenging assumptions, and for building ambition and confidence for delivery of ELM.

What has worked or is working well?

- The UOFG has worked well in terms of e.g., knowledge exchange and building confidence.
- The WFP approach combining the environmental and business advice appears to have been a positive experience for the farmers and there are signs that this will assist in positive changes in land management.

Legacy – longevity?

- In terms of delivering changes on the ground, the work is in its early stages. However, the signs are encouraging with the farmers in the group talking about the financial benefits of having more semi-natural grassland as part of their farming system. The application for meadow creation and restoration was made by the farmers themselves, which is encouraging.

What has not worked?

- Too early to assess outcomes of the approach.

Sources:

Hearle A. National Trust - The Stepping Stones Project and the Upper Onny Farmers Group 2021, April 2021
Hearle A. National Trust - DEFRA T & T, Stepping Stones Whole Farm Plans Phase 2 Report, January 2021
https://www.shropshirehillsaonb.co.uk/our-work/area-initiatives/stepping-stones

Appendix 2. Contact List

Table 15. Contact List

Organisation or project	Contact
National Trust Midlands	Richard Wheeldon, Farm and land use adviser
National Trust Wales	Andrew Tuddenham Land use and farm adviser for Wales
National Trust Central	Ben McCarthy (head of nature conservation) and Sue Cornell
Plantlife	Cath Shellswell, Lizzy Wilberforce. Isobel Hall, SoMM2, apprenticeship for grassland advisers and worked for 20 years on HayTime
RSPB Senior Agriculture Adviser for UK and was lead on Farm Wildlife	Gethin Davies
Llŷn Farming for the future and previous Llyn partnership projects	Jan Sherry, Arwel Jones, Andrew Tuddenham, Andy Godber
PFLA	Emma Douglas
NFFN	Rhys Evans, Hillary Kehoe
Herefordshire Meadows Group	Caroline Hanks who facilitates the group and also runs 'Farm cluster groups'
Bumblebee Conservation and Calonwen	Sinead Lynch
NRW	Stuart Smith, Clare Burrows, Ceirios Davies, Gill Barter, Becky Wright, Leila Thornton, Pete Jones, Cara Wilson, Nia Baker, Elwyn Sharps, Dave Drewett
AGAP	PONT
Stepping stones ELMS trial	Cath Landles
NE Kent Downs Landscape Project	Dan Tuson NE
Burren Life	Brendan Dunford, BFCP Manager
Elan Valley	Jan Sherry
Caeau Mynydd Mawr phase 1 and 2	Amanda Evans Carmarthenshire County Council
Meadows Groups Wales	Cath Shellswell
Floodplain meadows partnership	Emma Rothero
Innovative farmer SE Wales	Geraint Powell
Pembrokeshire Coast National Park	Sarah Mellor, Mary Chadwick, Julie Garlick