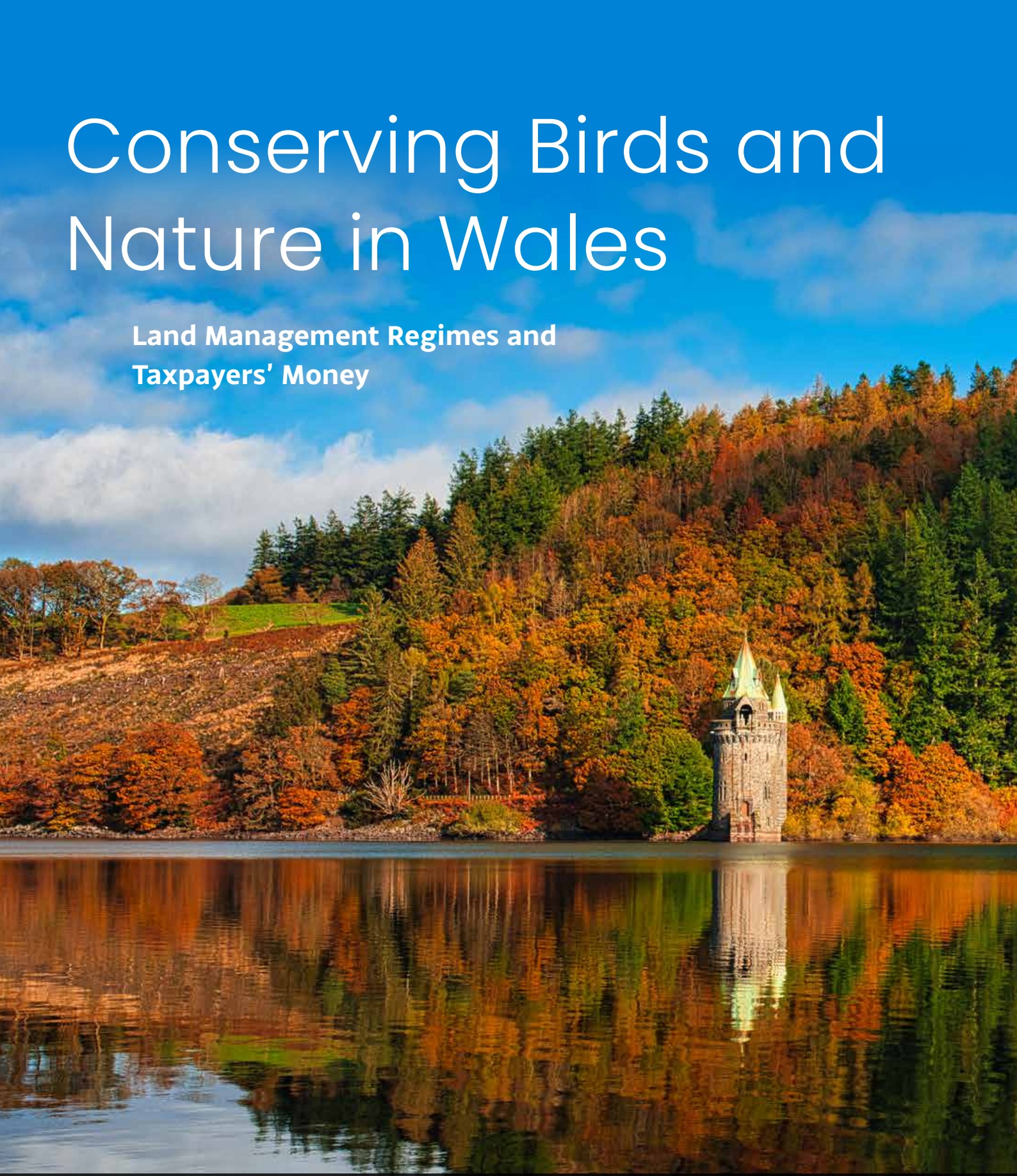
Conserving Birds and Nature in Wales

Land Management Regimes and Taxpayers' Money



Simon Denny May 2025
regionalmoorlandgroups.com

REGIONAL
MOORLAND GROUPS

Acknowledgements

The author is very grateful for the kind assistance and participation of farmers, estate managers, academics, conservationists, staff from RSPB Cymru, staff from GWCT Cymru, and staff of the Lake Vyrnwy Hotel & Spa for so willingly giving him their time (often a great deal of time) and information.

Without the involvement of those who live and work on the ground to conserve birds and nature in Wales, this report could not have been produced.

"A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."

Aldo Leopold, A Sand Country Almanac, 1949

Contents

A biotic community, also known as a biota or 'biocoenosis', is the group of organisms which live together and interact with each other within an environment or habitat. Together, the biotic community and the physical landscape or abiotic factors make up an ecosystem. Source: biologydictionary.net
Aldo Leopold (11 January 1887 to 21 April 1948) was an American writer, philosopher, naturalist, scientist, ecologist, forester, conservationist, and environmentalist. He was a professor at the University of Wisconsin and is best known for his book A Sand County Almanac (1949), which has been translated into 14 languages and has sold more than two million copies. Leopold was influential in the development of modern environmental ethics and in the movement for wilderness conservation. His ethics of nature and wildlife preservation had a profound impact on the environmental movement, with his eco-centric or holistic ethics regarding land. He emphasised biodiversity and ecology and was a founder of the science of wildlife management. Source: en.wikipedia.org/wiki/Aldo_Leopold

The view across the lower part of Lake Vyrnwy

Executive Summary

The management of the uplands of Wales, and of those in the rest of the UK, depends on the choices made by landowners and their agents. Management choices result either from experience, or beliefs, or evidence; or from a combination of all three. The key to understanding the economic, social and environment impacts of an area of land is how it is managed. All management regimes are a choice, including rewilding or not managing at all.

The management choices made result in different outcomes and policy makers must be aware of these different outcomes, especially when allocating taxpayers' money to landowners and managers.

Since 1996, the RSPB at Lake Vyrnwy in Powys has been managing, but not owning or controlling, a reserve that includes a very large upland farm, the largest organic farm in Wales. Much of this reserve is designated as a Site of Special Scientific Interest, a Special Protection Area and a Special Area of Conservation. The RSPB is constrained in what it can do to manage Lake Vyrnwy by the water companies that own the land (Hafren Dyfrdwy) and have the water extraction rights from Lake Vyrnwy (United Utilities). The charity has a small, dedicated, team of its own staff, supported by volunteers and contractors to manage the reserve and farm. It works closely with local stakeholders to bid jointly for funding for improvements to the area, and to communicate and consult on its actions.

The RSPB in Wales, including at Lake Vyrnwy, has received large amounts of taxpayers' money from funding bodies, including the Welsh Government, Natural Resources Wales (NRW), and the National Lottery. In addition, the Welsh Government has granted substantial sums of taxpayers' money to the RSPB to increase its ability to successfully apply for funding. However, according to the RSPB's own data, the number of many red-listed birds at Lake Vyrnwy has declined since the 1990s, and a bid for National Lottery funding made in 2021 (the RSPB was part of the group that submitted the bid) described the state of the reserve in dramatically negative language. It appears that the RSPB's management of the area is not currently achieving its own objectives for the area, or the charity's principal objective, the conservation of wild birds and their habitats, which throws up questions about the allocation and use of taxpayers' money.

In contrast, many estates and farms in Wales, and the wider UK, have demonstrated that they can run viable and sustainable food-producing businesses while, at the same time, managing their land in ways that both improve habitats and support (often increase) large amounts of wildlife, including red-listed birds. Importantly, these food-producing businesses do not receive anything like the amount of taxpayers' money that the RSPB at Lake Vyrnwy and elsewhere has received. Estates and farms can deliver very cost-effective wildlife programmes, especially when agricultural policies incentivise them to do so.

This report does not suggest that the RSPB should not receive public money to run the Lake Vyrnwy reserve. Some of its work in the area is commendable, although it is certainly not unique to the RSPB or other conservation organisations. However, this report argues that, if governments and funding bodies responsible for allocating taxpayers' money want best value for that money, then they should ensure that attractive funding schemes are available to estates and farms which can also apply for it and use it to deliver high-quality and sustainable outcomes for wildlife and cost-effective outcomes for taxpayers. The Welsh Government has an excellent opportunity to improve the state of nature – habitats and wildlife – in Wales. To seize this opportunity, it must gain the support and active involvement of the farming community, which will require the Welsh Government to demonstrate that it both understands and values farming. The opportunity to deliver cost-effective gains for nature in Wales makes the effort very worthwhile.

Looking north west from the hotel

Introduction

[3] *See Biodiversity loss: The UK's international obligations (parliament.uk) (although see also footnote 125).*

[4] *See Nature fight 'needs more national park land held in public hands' - BBC News 12th September 2024.*

There is a widespread consensus that wildlife has declined in the UK since the end of the Second World War, and that this decline has accelerated in recent years. The UK Government has described Britain as "one of the most nature-depleted countries in the world."[3] However, there is no consensus among policy makers, conservation organisations, or academics about whether or how this decline can be halted or reversed. Governments in the UK (including in Wales) have developed agricultural policies that have been, at least partly, designed to encourage farmers to be more nature friendly. Conservation organisations claim that they have the skills to improve the situation, and the Campaign for National Parks has called for the authorities overseeing the protected landscapes to be given more powers to buy up private land under what they call a 'People's Charter' so they can do more to boost biodiversity.[4] The common factor underpinning these three approaches is that they will be funded by the taxpayer, yet there is very little attempt to assess the value for money of each approach.

Given this context, this report has been commissioned by the Regional Moorland Groups with the brief of examining how different land management regimes operating in Wales can conserve and improve habitats to support biodiversity, particularly birdlife, and to assess the cost-effectiveness of these regimes.

Wales was selected as the focus for the study due to its size, its agricultural and conservation policies, and the large-scale wildlife reserve at Lake Vyrnwy.

The author's primary research visits to Welsh farms, commercial estates and to Lake Vyrnwy (he has held eight study trips between October 2023 and August 2024), and the extensive secondary research carried out for this report, have been designed to answer the following questions:

1. Are there management methods of conserving and improving habitats to support birdlife that are more effective than the others?

2. Are there ways of conserving and improving habitats to support birdlife that provide better value for the use of taxpayers' money than others?

3. Are there lessons that the Welsh Government, and policy makers in other parts of the UK, can derive from the answers to questions 1 and 2?

The research that has produced this report was commissioned by the Regional Moorland Groups. However, it must be noted that there has been no attempt to influence the content and findings of the report by the Regional Moorland Groups, or any other organisation. The report's contents are the responsibility of the author.

The Author

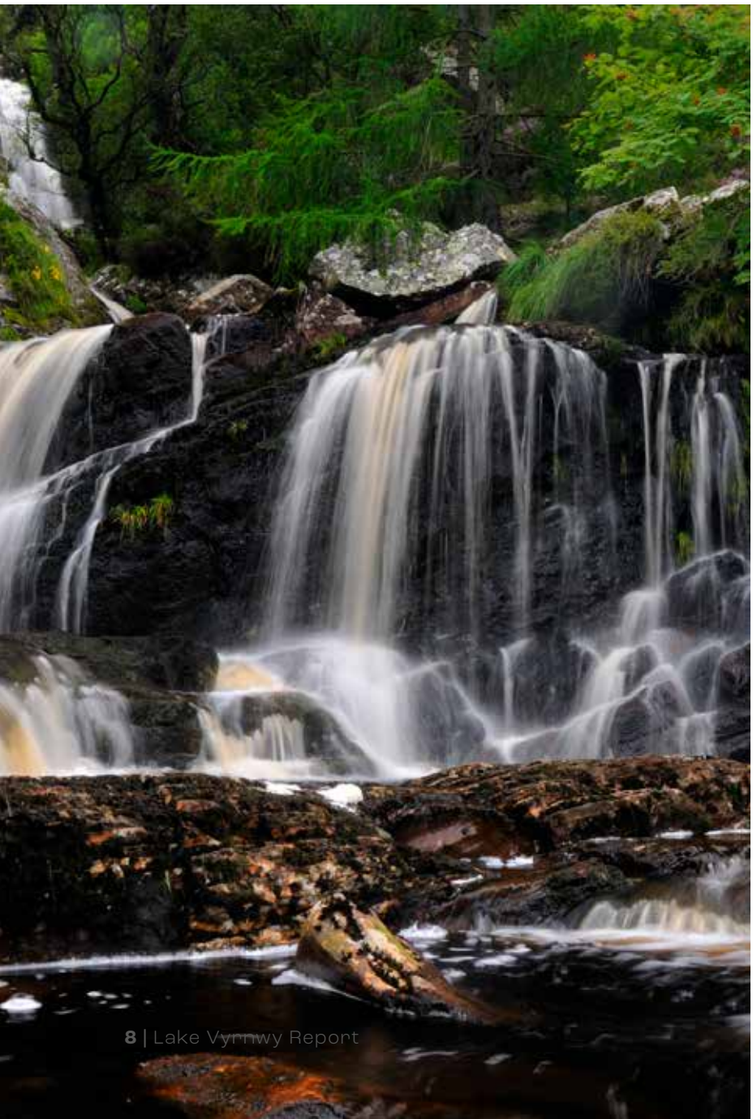
Simon Denny BA, MA, PhD, Holder of The Queen's Award for Enterprise Promotion

Simon Denny served in the British Army from 1976 to 1986. He then worked for a major UK retailer until 1992 when he moved into Higher Education. He worked at the University of Northampton (and its predecessor institutions) until 2018. At Northampton he initially specialised in designing bespoke development programmes for companies, three of these schemes won National Training Awards. He also designed, won funding for, and managed numerous large-scale projects aimed at helping disadvantaged people develop the confidence and skills necessary for employment, or self-employment. In 2006 Denny was awarded the University's Court Award for services to local enterprise. He became Professor of Entrepreneurship in 2007. In 2010 he was granted The Queen's Award for Enterprise Promotion. He set up the Institute for Social Innovation and Impact at the University of Northampton, and from 2015 to 2018 was Executive Dean for Research, Impact and Innovation.

Since 2018, Denny has worked as an independent researcher and consultant. His clients have included the Ministry of Defence (2016 to present), the Reserve Forces and Cadets Associations of Wales and Lowland Scotland, the Royal College of Nursing, the Motivational Preparation College for Training, the Cadet Vocational College, the Uplands Partnership and the Moorland Association. He is an external associate of the Institute for Social Innovation and Impact at the University of Northampton. A trustee for two charities, a member of two Wildlife Trusts and the Game & Wildlife Conservation Trust, Denny is a keen birdwatcher both in the UK and abroad, and enjoys watching Northamptonshire County Cricket Club, gardening, fishing, and shooting. He has authored numerous academic articles and research reports.

Methodology

Data for this report was gathered from multiple sources, both secondary and primary. Secondary data was gathered through a review of academic literature using, wherever possible, peer-reviewed sources. In addition, web searches for relevant policy announcements, reports, blogs, and commentaries were regularly carried out.



The literature review as a research method has the advantage of enabling an author to be up to date with relevant knowledge, as well as enabling different items of evidence to be assessed and compared. However, it is acknowledged that literature reviews often lack thoroughness and rigour, especially when they are conducted *ad hoc* and do not follow clear methods rather than following a specific methodology (Snyder, 2019). To attempt to guard against this weakness, all the peer-reviewed literature has been assessed by reviewing the methodologies described by the authors.

It was not assumed that because an article appeared in a peer-reviewed journal, it had met a 'gold standard'. Peer review has become an essential component of the academic writing process, helping to ensure that papers published in scientific journals answer meaningful research questions and draw accurate conclusions based on professionally executed experimentation. However, despite its wide-spread use by most journals, the peer-review system has also been widely criticised for the slowness of the process to publish new findings, the perceived bias shown by some editors and or reviewers (Kelly et al, 2014), and the tendency for work by established figures to be published ahead of work by new researchers.[5] The increase in the number of online only or e-journals with little or no peer review may pose risk to the advance of knowledge. Articles in this type of publication have been avoided wherever possible.

Primary qualitative data for the report was gained through interviews, many of which lasted over two hours. Table 1 provides a summary of the interview participants (n = 22). Interviews were conducted either in-person, or via online conferencing or the telephone. All interviewees had the aims of the research project explained to them in advance of their meeting with the author, who conducted the interview. Notes were made during the interview. Inevitably, interviewees talking about the same subject had some different recollections and interpretations of dates, actions, and results. However, these differences were (fortunately) minor and clarification of events, etc, proved simple. The data gathered in the interviews was analysed using effects clusters and context charts. These display methods enabled themes and patterns to be identified and relations between variables noted. A check was carried out for research effects by an independent academic carrying out a peer review of data gathering and analysis.

Interviews of course are not a perfect tool. They are a highly obtrusive form of data collection, defined by Rieger and Wong-Rieger (1995) as "conversations for the purpose of obtaining specific information". They have advantages over other data collection methods used in social science research, including the ability to establish rapport with respondents and thus increase the likelihood of responses, as well as the opportunity for the respondent to clarify and explain their answers to the interviewer's questions.

Belson (1981) stresses the importance of testing interview questions before they are used with respondents. Kumar, Stern and Anderson (1993) point out that respondents should be knowledgeable about the issues being researched. Huber and Power (1985) point out that informants sometimes provide inaccurate or biased data, for four possible reasons: they are motivated to do so; their perceptual and cognitive limitations result in inadvertent errors; they lack crucial information about the topic of interest; or they have been poorly questioned. Dexter (1970) makes the obvious, but important point that the interviewers should have relevant experience of the topic being researched so they can interpret what they hear and ask meaningful supplementary questions. All people interviewed for this report were clearly knowledgeable about their role in land management and conservation; all of them had been involved in their field for at least five years, and some had been working in their roles for over 30 years. The author has been actively researching the economic, social and environmental impacts of land management regimes for nearly a decade and has practical experience in some aspects of wildlife conservation. Therefore, it is suggested that this report was able to overcome some of the weaknesses of interviews as a research tool.

To mitigate against respondents providing inaccurate or biased data, interview data was triangulated with data from the literature review. In addition, confirmation of data provided by some interviewees was provided by asking other informed interviewees for their understanding of a topic. In addition, the researcher, when appropriate, challenged some statements by respondents (eg. by saying things such as "surely, that cannot be correct") to give respondents the opportunity to reflect

Table 1: Summary of interview respondents

Interview group	N
RSPB Cymru reserve staff	1
Farmers	4
Sustainable Management Scheme project co-ordinators	2
Independent conservationist in Wales	1
GWCT Cymru staff	3
Lake Vyrnwy Hotel & Spa managers and staff	3
Private agricultural estate management staff	6
Researchers (UK university)	2
Total	**22**

[5] *See economist.com/science-and-technology/2022/09/14/an-influential-academic-safeguard-is-distorted-by-status-bias*

on what they had said. Finally, the researcher occasionally asked closed questions (eg. by asking questions such as "surely there cannot be many birds here?") to generate an immediate response that could be followed up with supplementary questions. It should be noted that the latter tactics were only used in interviews where a rapport between interviewer and respondent had been established.

The author was, until 2018, Executive Dean for Research, Impact and Innovation at the University of Northampton where he established and managed research centres and supervised several doctoral students. The ethical standards expected of university researchers were applied to this project. All respondents gave their informed consent to be interviewed and were assured of confidentiality and anonymity. Interviews with participants are reported anonymously, with pseudonyms randomly assigned to case studies. Data protection and storage arrangements were explained, as was safeguarding; respondents were informed that they did not have to answer any question they did not want to. Additionally, all respondents were sent, in draft, any parts of the report that their answers had informed so they could request amendment to, or removal of, any content that did not accurately reflect their answers to questions. In accordance with JISC guidance, all project data was deleted and destroyed after the publication of the final report.

"Although there were at the time, and have been since, many people who have criticised the decision to flood the valley, the lake's creation in fact brought prosperity and stability to the area."

Local history website

Lake Vyrnwy: A Brief History[6]

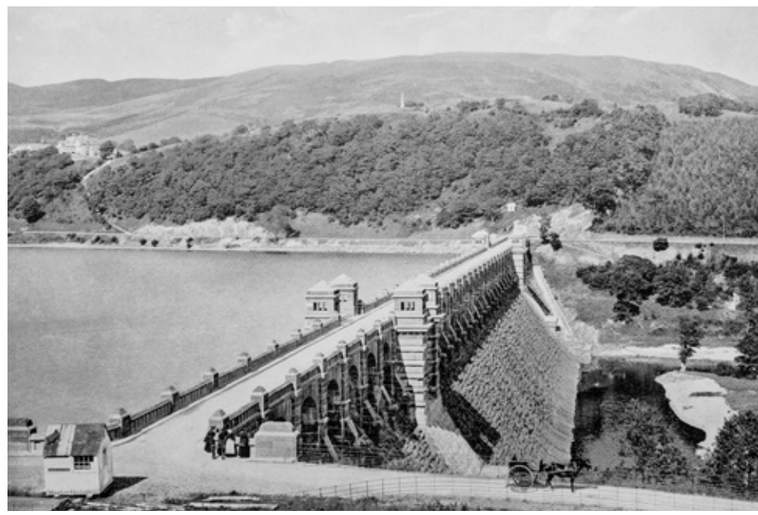
The story of the modern Lake Vyrnwy began in 1877 when the city engineer of Liverpool, a Mr Deacon, arrived in the small village of Llanwddyn to assess whether the valley of the river Vyrnwy could be dammed to create a large, new reservoir that would supply water to the growing city of Liverpool. He identified that there was a bar of rock lying across the valley, where it narrowed, that made it an ideal location for the construction of a dam.

Three years later, in 1880, Parliament passed the Liverpool Corporation Waterworks Act, despite some opposition to the creation of the dam and reservoir.[7] Work began on the site in July 1881 and a workforce of over 1,000 men was employed during the busiest stage of the dam's construction. When it was completed, the dam was the largest artificial reservoir in Europe. The old village of Llanwddyn (where Mr Deacon had stayed), and other buildings that were due to be covered by water, were demolished and a new Llanwddyn village[8] , complete with church, was built. The construction of the dam was completed by 1888 and the new lake filled within a year. A 42-inch pipe was built and in July 1892 the first water from Lake Vyrnwy reached Liverpool.

From the start of its construction, the Vyrnwy lake was intended to be a clean water reservoir, from which water could flow untreated (apart from filtration) into taps in Liverpool. Therefore, as well as constructing the dam and laying pipes to carry water away from the lake, the Liverpool Corporation bought and managed the large area that formed the watershed that drained into the lake. Between the 1880s and 1930 an estate of some 26,000 acres (c. 10,520 hectares, or over 40 square miles) was purchased. Large areas of coniferous woodlands were planted around the lake. In 1946 the Corporation sold its plantations to the Forestry Commission and used the money from the sale to build a community centre, school and the new village of Abertridwr, less than a mile east of the southern end of the lake.

The Liverpool Corporation seems to have been a benevolent landlord. A local history website reports:

"Although there were at the time, and have been since, many people who have criticised the decision to flood the valley, the lake's creation in fact brought prosperity and stability to the area. During its long period of guardianship up to 1973, when the estate was passed into the hands of the Severn Trent Water Authority, the Liverpool Corporation proved to be a model landlord and employer. A clue to the benefits of this good care of



[6] *The material in this section of the report is largely derived from lakevyrnwy.com/history-timeline/*

[7] *See archives.library.wales/index.php/liverpool-corporation-water-supply-petition-and-act*

[8] *The village that is there today.*

The Straining Tower at Lake Vyrnwy

the community can be demonstrated by the fact that the census of 1961 showed a population fall of only 10% from the 1871 figure, while the average drop in seven similar parishes in the surrounding area was 50%." [9]

However, the same website also notes that:

"Following the Water Act of 1974,[10] *Lake Vyrnwy and the estate passed from the control of Liverpool Corporation into that of the Severn Trent Water Authority. So that the water could continue to be used by Liverpool, an abstraction licence was granted to the North West Water Authority (part of United Utilities since 1995), which now looks after the city's interests, enabling it to draw off from the lake. The management of the estate gradually changed under Severn Trent Water Authority with considerable alterations to the old, paternal Liverpool Corporation style of operation. The workforce on the estate was greatly reduced with much forestry work being done by contractors, as opposed to the home-based forestry gang. Another major change in practice came in the mid-1980s, with the start of a policy of allowing the sale of houses and buildings to private purchasers: something always resisted fiercely by the Corporation."*

It was the 1973 Water Act that brought into being the current ownership and management model of Lake Vyrnwy, where Severn Trent owns the land (since 2018 though its Welsh subsidiary, Hafren Dyfrdwy) but United Utilities controls the water and its extraction. A third party in the equation is the RSPB which in 1996 reached an agreement with Severn Trent to create a wildlife reserve on c. 5,000 hectares, c. 12,400 acres (a farm and tenanted land). Parts of the reserve are designated as a National Nature Reserve (NNR), a Site of Special Scientific Interest (SSSI), a Special Protection Area (SPA) and a Special Area of Conservation (SAC).

The Current Owners and Managers of Lake Vyrnwy

Hafren Dyfrdwy

After privatisation of the water companies in the 1970s, responsibility for the Vyrnwy Dam and associated structures fell to Severn Trent Water, and since 2018 to its subsidiary company, Hafren Dyfrdwy Cyfyngedig (Welsh for 'Severn Dee Limited', named after the two main rivers in its region).[11] Hafren Dyfrdwy is a water company providing water and wastewater treatment services, operating in north east and mid Wales. It serves 87,000 water and 22,000 waste customers in Powys, Wrexham, and parts of Flintshire, Denbighshire and Montgomeryshire. It has some 2,650 kilometres of water pipes and 500 kilometres of sewers to maintain, and it operates 100 water-pumping and 88 sewage-pumping stations, together with five water treatment works and 50 sewage treatment works.[12] Like other water companies, it is regulated by Ofwat, the economic regulator of the water sector in England and Wales. Hafren Dyfrdwy claims to provide 'Mid and North-East Wales with high-quality services at one of the most affordable prices in Wales and England'.[13]

According to its 2023 annual report (the latest available), Hafren Dyfrdwy's outcome delivery performance was rated 71% green (target achieved) in 2022-2023, and the company had reduced its financial penalty from £414,000 in 2021-2022 to £289,000 in the year covered by the report.

It claims that its small size (it is the smallest water company in the UK) enables it to be the most agile of the water companies. In 2022-2023 the company beat its pollution incident target and it continues "to be significantly ahead of our performance commitment for sewer blockages as our 'pee, poo and paper' education campaign continues to reduce non-flushables being disposed into the sewer system,"[14] which must be a relief to many. The company's visitor site at Lakes Vyrnwy attracts thousands of visitors every year.

In the year ending 31 March 2023, Hafren Dyfrdwy had a revenue of £38.655 million, but operating costs of £45.743 million, resulting in the deficit for the year being £6.346 million after all tax calculations. The company did not pay a dividend. However, in its 2024 report its parent company, Severn Trent, reported that group turnover was £2,338 million (ie. over £2 billion), its profit for the year before interest and tax was £511.8 million, its operating profit was more than

[9] *See llanwddyncc.co.uk/council-history/*

[10] *It is assumed that the author(s) of the website mean the Water Act of 1973, see en.wikipedia.org/wiki/Water_Act_1973#:~:text=The%20Water%20Act%201973%20(c,industry%20in%20England%20and%20Wales*

[11] *The company had previously served north east Wales and parts of North West England as Dee Valley Water until June 2018. Its parent entity, Dee Valley Group plc had shares listed on the FTSE Fledgling Index on the London Stock Exchange, and was purchased by Severn Trent in February 2017.*

[12] *Source: severntrent.com/about-us/our-businesses/*

[13] *See Hafren Dyfrdwy cymru.co.uk/regulatory-library/regulatory-library/*

[14] *Ibid.*

[15] *Source for all figures cited is severntrent.com/investors/results-reports-and-presentations/*

[16] *Source: en.wikipedia.org/wiki/United_Utilities#:~:text=United%20Utilities%20Group%20plc%20(UU,North%20West%20Water%20and%20NORWEB*

[17] *Source: unitedutilities.com/corporate/about-us/*

[18] *See unitedutilities.com/globalassets/documents/corporate-documents/united-utilities-16052024.pdf*

£140 million, and its adjusted profit for the year amounted to over £218 million. Turnover and profits were all higher than in the previous financial year[15] and the proposed final dividend was 70.1p per share, up from 64.09p in 2022-2023. Hafren Dyfrdwy may not make money from water and waste services, but Severn Trent does.

United Utilities

The United Utilities Group is a large and complex business and the UK's largest listed water company, providing water to more than seven million people. The business was founded in 1995 from the merger of North West Water and NORWEB. It was the electricity distributor for the North West, when it sold its electricity business. The group manages the regulated water and waste in Cumbria, Great Manchester, Lancashire, Merseyside, most of Cheshire and a small part of Derbyshire.[16] It employs more than 5,000 people and works with a wide range of sub-contractors.

United Utilities defines its purpose as "providing great water for a stronger, greener and healthier North West," and says that it wants to deliver its services "in an environmentally sustainable, economically beneficial, and socially responsible manner and create sustainable long-term value for all". It states that its "purpose highlights how environmental, social and governance (ESG) considerations are integral to everything we do. Each step in our water cycle and every aspect of our activities is aligned with delivering our purpose, and this is what drives us to create value for all of our stakeholders".[17] In October 2023 the Group planned to spend £13,677 million on service provision. However, following discussions with Ofwat it now plans to spend £14,198 million, and to reduce average annual customer bills to be £566.14 in real terms by 2030. The Group's full year results statement for 2023-2024[18] show that it earned £1.949 billion in the financial year (an 8.1% increase on 2022-2023), and had an operating profit of £480 million (an increase of 8.9% on the previous year). Profit after tax was just under £127 million (a fall of 38.1% on 2022-2023) and c. £189 million was paid out in dividends. Although United Utilities is not quite as profitable as Severn Trent, it is a very large and very profitable business.

The Royal Society for the Protection of Birds

The Royal Society for the Protection of Birds (RSPB) is a charity founded in 1889. Its principal objective is the conservation of wild birds and their habitats. The Society aims to "bring people together who love birds and other wildlife, and who want to take action to restore the health and diversity of the natural world". To this end it carries out large-scale conservation projects, protects and restores habitats and tries to save species from extinction. The charity states that: "We're living in a nature and climate emergency, and we won't stop whilst the threats persist." The RSPB wants to "create more, bigger, better and well-connected protected areas for nature on land and at sea. We manage more than 200 nature reserves in the UK from the Shetlands to the Suffolk coast."[19] The Society employs some 2,200 people and enjoys the services of c. 10,500 volunteers.

The 2022-2023 Annual Report shows that the RSPB's total income for the year was £164.7 million (a £7 million increase on the previous year). Member income amounted to £46.0 million (from 1.14 million members); legacy income was £44.2 million; grant income was £26.4 million; trusts and corporates donated £9.3 million; and commercial trading generated £23.7 million. It is a very large charity with multiple income streams. The funding and expenditure of the RSPB is explored in more detail later in this report.

Some of the activities of the RSPB have opened it up to criticism, especially its forays into what appears to be politically-driven messaging. In August 2023 one of its board members, Dr Ben Caldecott, said the RSPB had made "simply not an appropriate contribution to our public discourse" when it accused the then Prime Minister and two other Ministers, of being "LIARS" (the RSPB used upper case in its messaging) on social media for changes to environmental regulations to facilitate the building of new houses. On the BBC Radio 4 Today programme, the Chief Executive of the charity denied that the RSPB was entering politics but accepted that the social media post was incorrect and inappropriate. In his interview with the Chief Executive the BBC's Nick Robinson pointed out that the RSPB's Government Affairs Manager had re-posted the 'LIARS' claim and written: "Sometimes in campaigning you just have to call a spade a spade." Robinson pointed out that before joining the RSPB, its Government Affairs Manager had been a researcher for the Labour Group on the Greater London Authority and a Labour Constituency Party Secretary in Hackney.[20] Interestingly, this episode took place only 10 months after the Chairman of the Charity Commission warned charities that public debate was becoming too polarised and personal and that it presented a "risk to our democratic culture". In a speech given in October 2022, he called on charities to "model a better kind of public discourse" that should "inspire and inform, rather than stifle and poison, reasoned debate".[21] In August 2024, the Charity Commission ruled that the RSPB's 'LIARS' tweet had been inappropriate and said the 'nature and tone' of the post had not been cleared at the appropriate level within the charity. The RSPB has apologised for the incident and the Charity Commission has not levied a fine on the charity.[22]

[19] *Source for this paragraph is rspb.org.uk/about-us/who-we-are*

[20] *See bbc.co.uk/news/uk-politics-66666435*

[21] *See telegraph.co.uk/politics/2022/10/11/charities-warned-not-play-politics-adverts-criticise-truss-plans/ and gov.uk/government/speeches/orlando-frasers-speech-to-the-annual-public-meeting*

[22] *See RSPB tweet calling Rishi Sunak a liar was 'inappropriate', watchdog rules (telegraph.co.uk).*

Other Lake Vyrnwy Stakeholders

Although all the people who live, work or visit Lake Vyrnwy could loosely be described as 'stakeholders', there are three organisations that are particularly noteworthy as they have a permanent presence in the area.

The William Pears Group,[23] a financing and real estate organisation, bought 17 homes on the Lake Vyrnwy estate from Severn Trent in 2013. At the time of the sale, Tim Dodd, property and estate management manager for Severn Trent Water said: "The views of our residents are very important to us and we chose William Pears as they have demonstrated that they are committed to the community and the local environment. They have a great track record in property management and the ability to fund long term investment." Meanwhile Ashley Whitby, managing director of the William Pears Group said: "We are committed to making sure that our properties meet with modern expectations, are well maintained and our tenants are provided with a good quality service. I am delighted that we have the opportunity to own and manage this portfolio. We are always looking to expand our residential portfolio with good quality properties. We continue and strive to demonstrate that responsible private sector landlords can be as good as the best."[24] Although the William Pears Group own some of the houses on the estate, the organisation plays no part in the management of the area.

Llanwddyn Community Council[25] is the locally-elected body covering the whole of Lake Vyrnwy and the surrounding area, including the village of Llanwddyn, which is split over two locations, one adjacent to the Lake Vyrnwy dam and one at Abertridwr. It has a population of approximately 205 voters.

The third stakeholder is the **Lake Vyrnwy Hotel & Spa** which was originally built in the 1890s by the Liverpool Corporation to accommodate people who came to admire the dam and reservoir. The area became increasingly popular with visitors and a new wing was added to the hotel in 1905; it expanded again in 1930. The hotel was managed by a series of tenants until 1985 when a Colonel John Baines, the then tenant, purchased the hotel from Severn Trent. The Bisiker family of Canada bought the hotel in 1987 and added yet more bedrooms as well as conference and banqueting facilities.[26] The hotel was put up for sale in July 2024.[27] The hotel is the largest employer in the area with between 65 and 80 staff, depending on the time of year. Most of the staff live locally.

The Community Council and the hotel are both members of the Lake Vrynwy Stakeholder's Forum, the Vyrnwy Partnership, led by Hafren Dyfrdwy. The Forum meets monthly and exists to further the development of the area, especially as a tourist destination. Lake Vyrnwy Tourism has been set up to this end and is made up of businesses including accommodation providers, cafes and activity companies,[28] it also has a useful website, set up in 2014, although it is not clear how often it is updated.[29] The Forum has a steering committee consisting of the RSPB, Hafren Dyfrdwy, Severn Trent, United Utilities and the hotel. Members of the Forum work together to submit bids for funding from the Welsh Government and other funding bodies. The Vyrnwy Partnership has produced a range of literature for tourists such as 'Walking trails at Lake Vyrnwy'.[30]

[23] *See williampears.co.uk/#about-us*

[24] *Source for both quotes countytimes.co.uk/news/15833426.london-firm-buys-up-lake-vyrnwy-properties/*

[25] *See llanwddyncc.co.uk/ A Community Council in Wales is similar to a Parish Council in England.*

[26] *Source for this paragraph lakevyrnwy.com/*

[27] *See christie.com/news-resources/press-releases/iconic-welsh-hotel-lake-vyrnwy-hotel-spa-launches-to-market/*

[28] *See lake-vyrnwy.com/activities.html and countytimes.co.uk/news/23459912.lake-vyrnwy-powys-businesses-expecting-bumper-year*

[29] *See lake-vyrnwy.com/news.html*

[30] *See lake-vyrnwy.com/images/user/Severn%20Trent%20walks%20leaflet%20approved.pdf Note that this leaflet was produced when the Forestry Commission managed the woodland.*

[31] *See bbc.co.uk/news/uk-wales-mid-wales-11426029*

[32] *See bbc.co.uk/news/uk-wales-mid-wales-11596997*

The Lake Vyrnwy estate rises from meadow to moorland

The Management Structure at Lake Vyrnwy

The Estate

In 2010 Severn Trent tried to sell its land holding around Lake Vyrnwy on a 125-year lease and a tendering process was put in place. Bids were received from a businessman (Mr R Jones, orginally from nearby Bala), the chief executive of Celtic Property Development[31] and RSPB Cymru with the Mid Wales Housing Association.[32] In the autumn 2010, Llanwddyn Community Council conducted a survey to get the views of local residents about the proposed sale. There were 94 responses (a very high rate given the size of the population) which highlighted that the community's priorities for the future ownership of Lake Vyrnwy were social and economic, with environmental issues being rated much lower, see Table 2.

I believe the new owner should....	No. of Responses
Create opportunities for new employment	68
Improve communication between all parties associated with the estate	67
Improve the maintenance of existing properties	67
Adequately maintain public areas	62
Work to maintain the rural ethos of the estate and community	53
Create opportunities for new businesses in the area	51
Offer affordable properties to rent	50
Promote Lake Vyrnwy and local tourism	43
Protect and enhance conservation and the flora and fauna of the estate	34
Provide provisions for new homes and local facilities	24

Table 2: Findings of the Community Survey about the sale of Lake Vyrnwy Estate carried out by the Llanwddyn Community Council 28 October to 6 November 2010

[33] *See bbc.co.uk/news/uk-wales-mid-wales-14239070*

[34] *See bbc.co.uk/news/uk-wales-mid-wales-14285145*

[35] *See countytimes.co.uk/news/15833990.long-term-plans-for-vyrnwy-estate/*

Of the responses to the survey, 44 made specific comments about the sale. It is notable that nearly all these comments were critical either of a lack of investment in the area by Severn Trent or of the way RSPB had managed the farm and reserve before 2010. Typical of the comments made were:

> "Over the last 10 years or so the estate has become unkempt, whereas when Severn Trent was employing local people to work on the estate and land, forestry and local areas were kept in good repair."

> "This estate needs change, this estate needs investment."

> "I believe that the worst thing that happened to Lake Vyrnwy was the RSPB."

> "Hopefully the RSPB is not successful in their bid. They have been here at Llanwddyn for 30 years and have not really done anything positive for the community in the eyes of the locals."

> "It would be the final nail in the coffin if the RSPB took over. The things that go on here are disgraceful."

> "Severn Trent have shown that they have not been able to cope with managing the estate efficiently."

> "If Severn Trent have any remorse for what they have destroyed in the Llanwddyn area, they should at least make sure the sale of the estate goes into the right hands."

Appendix A reproduces all the comments made by survey respondents.

Whether Severn Trent took notice of the survey results is not certain, but on 23 July 2011 the BBC reported that Severn Trent had announced that it had chosen its preferred buyer for the estate and that it would "identify the buyer after consultation".[33] At this stage the only known bidders were Mr Jones and the RSPB with Mid Wales Housing Association. However, two days later it was reported that: "A joint bid by United Utilities and the RSPB was the right choice to develop the site while protecting the environment."[34] The BBC reported that:

"*Selling agents have described the 23,000 acre (9,308 hectares or 93 square kilometres) site near the village of Llanwddyn, Montgomeryshire, as the largest land sale in living memory in England and Wales, with a value of £11m. United Utilities and RSPB Cymru have jointly bid for the agricultural holdings at Lake Vyrnwy, while FIM Sustainable Timber & Energy LP was named preferred bidder for the estate's commercial woodland.*"

However, for some reason United Utilities withdrew from the sale and the estate was taken off the market in June 2013[35] although, as noted earlier, 17 properties in the area were purchased by the William Pears Group. Despite the failure of the sale, in May 2014 Severn Trent said that it was committed to playing a part in the future of the estate, with Mr Tim Dodd, manager for property and estates for Severn Trent Water, saying: "It is a stunningly beautiful area and we're committed to playing our part in its future. By working together with other organisations, we can help develop a sustainable platform." Mr Dodd also said that any plan for the future of the estate could take up to 15 years to implement. He pointed out that although Severn Trent owns the land in the Vyrnwy area, a number of organisations had to work together to manage it, including NRW (implying that Severn Trent expected public money to be made available to Lake Vyrnwy) and the RSPB.[36]

One of the picnic sites at Lake Vyrnwy

The Woodland

The coniferous woodland around the lake (mainly larch) is owned by Hafren Dyfrdwy. This woodland, planted in conjunction with the Forestry Commission, is now managed by a contractor, Tilhill. Tilhill is part of the BSW Group[37] which is in turn owned by Bilderholz, an Austrian company.[38] Bilderholz is the fifth-largest global sawmilling group. The conifers have been conventionally managed for commercial use. Recently, the larch has been attacked by *Phytophthora ramorum*, a fungal-like organism now widespread in the UK which causes the death of a wide range of trees and shrubs.[39] As a result, large swathes of larch are being clear felled (the timber can still be used for some purposes).

A recently-approved Forest Resource Plan developed by Hafren Dyfrdwy has proposed significant changes to benefit biodiversity, including introducing broadleaf trees to provide better buffering to the moorland edge and connectivity to other habitats. This plan appears to be an important development.

The RSPB at Lake Vyrnwy

The RSPB started having a presence at Lake Vyrnwy in 1977 when it signed an agreement with Severn Trent to provide advice on the management of the protected areas of the estate, although the charity had no management control at this stage. In 1996 a further agreement was reached with Severn Trent for the RSPB to run the upland in-hand farm (Ty-Llwyd) on a Farm Business Tenancy (FBT), based on a partnership approach with financial risks and benefits equally shared. The farm, which has been fully organic since 2001, covers nearly 4,400 hectares of upland farm, moor and blanket bog and is managed "primarily for nature conservation benefits". In June 2015 RSPB Cymru announced that: "The long-term future of the Lake Vyrnwy estate farm in Powys,

[36] *Ibid.*

[37] *See tilhill.com/about-us/bsw-group/*

[38] *See binderholz.com/en-us/bsw-group/*

[39] *The greatest impact of Phytophthora ramorum so far has been on larch plantations, leading to thousands of hectares of felling around the UK.*

In November 2022, the RSPB leased a new area at Lake Vyrnwy from NRW meaning that it managed over 2,000 hectares in addition to the farm.

[40] *Source: birdguides.com/news/long-term-future-secured-for-lake-vyrnwy/*

[41] *Ibid.*

[42] *See fwi.co.uk/news/rspb-strikes-long-term-deal-4800ha-organic-farm*

[43] *Unsurprisingly, the RSPB has installed hundreds of nest boxes in the broadleafed woodland, primarily for Pied Flycatchers, an amber-listed species. It is encouraging to note that a work programme by the charity has nearly eliminated invasive rhododendron from the woodland it manages.*

[44] *Source: rspb.org.uk/about-us/annual-report/making-lake-vyrnwy-better-for-nature*

mid-Wales, has been secured."[40] as Severn Trent Water had granted a long-term Farm Business Tenancy lease of Ty-Llwyd Farm to RSPB Cymru (Ty-Llwyd Farm is claimed to be the largest organic farm in England and Wales). The announcement said that the land and surrounding area is important for birds, beetles and moths as well as storing carbon in its blanket bog and the provision of drinking water to Liverpool from the lake itself. Encouragingly, it was claimed that the agreement "will mean more investment in the farm from all stakeholders. It will also mean that RSPB Cymru will have more control over the farming business, allowing the charity to make decisions, working with NRW, to develop a more sustainable grazing and farming model over time."[41]

The Farmers Weekly[42] website described the agreement as: "One of the largest ever farmland rental deals in England and Wales." It was also one of the longest FBT agreements with the rent being a profit-based split between Severn Trent Water and the charity. The RSPB said it had agreed to work with NRW to develop sustainable farming and grazing methods on the site, with 3,200 Welsh Mountain sheep, 120 Welsh Black cattle and hill ponies. The FBT also includes some low-lying areas at the southern end of the lake and the RSPB has management responsibility for lower-lying broadleaf woodland areas.[43]

In November 2022, the RSPB leased a new area at Lake Vyrnwy from NRW meaning that it managed over 2,000 hectares in addition to the farm. The new area, Bryn Fawnog, consists of afforested deep peat. The charity announced that:

"*With the help of local contractors, we plan to restore this land back to healthy blanket bog, which is vital in the fight against climate change, as it locks carbon into the land rather than releasing it into the atmosphere. It also helps to alleviate flooding, by absorbing excess water and then releasing it gradually. Combined, the bogs at Lake Vyrnwy are estimated to contain enough peat to fill Cardiff's Principality Stadium from pitch to rooftop more than 22 times, storing carbon equivalent to nearly half of Wales' annual carbon footprint! Lake Vyrnwy is one of the most important wildlife sites in Wales and is designated as a Site of Special Scientific Interest (SSSI), a Special Protection Area (SPA) and a National Nature Reserve (NNR).*"[44]

The RSPB reserve at Lake Vyrnwy is not 'a reserve with a gate'; the charity does not even own a car park. Thus it is not possible to measure the number of visitors that come to the lake because the RSPB is there, as visitors are attracted to the locality for many reasons.[45] It is important to note that Lake Vyrnwy should not be seen as a typical bird reserve, similar to the one the RSPB runs at Minsmere in Suffolk,[46] or the one run by the Norfolk Wildlife Trust at Cley in Norfolk.[47] It is not a place that thousands of people visit to walk from one hide to another to view birds; rather it is a landscape-scale area that the RSPB, in partnership with the landowner (Hafren Dyfrdwy) is trying to manage for long-term, sustainable habitat restoration that also delivers what are now called 'public goods'.[48]

Ty-Llwyd Farm covers just under half of the 10,000 hectares of the estate. Lower lying areas around the lake are mainly held by commercial tenants, who tend to have a better balance of upland and low-lying land than the RSPB. There are some privately-owned houses and the hotel.

The RSPB's management of the area has evolved over time. The initial motivation for the area's management was to maintain the bird species covered by the Berwyn SPA, but it has evolved to focus more on ecosystem restoration based on a whole landscape thinking model, an important point that is not appreciated by some commentators. It is not clear whether this change in focus is due to the difficulty the RSPB has had in maintaining the bird species of area that had led to SPA designation, although it can be argued that it is a move away from the RSPB's principal objective.

In 2024 the RSPB's aims for its reserve at Lake Vyrnwy were stated to be:

- Ecological restoration at scale to restore the area's habitat to the conditions described in its designation[49] to support wildlife. This involves maintaining and creating a mosaic of vegetation running from lowland meadow up to moorland.
- Use the farm as a tool to achieve habitat restoration by demonstrating sustainable management that will both make it productive and support nature.
- Achieve more though engagement with:
  - Neighbours: forestry (establish buffer zones between wood blocks and moorland); and tenant farmers;
  - Connections with the community and the landscape;
  - Empowering people to do things for nature.

To help achieve these aims, the charity has reduced the number of animals grazing on the moor to a current level of around 1,500 breeding ewes (Welsh Mountain) and c. 90 cattle (Welsh Black).[50] There is also

[45] *The RSPB reserve managers think that c. 30% of visitors to Lake Vyrnwy may be RSPB members, but data about visitors is not gathered as it would not be practicable.*

[46] *See rspb.org.uk/days-out/reserves/minsmere*

[47] *See norfolkwildlifetrust.org.uk/CleyMarshes*

[48] *Public goods include such concepts as clean air, clean water, carbon sequestration, etc.*

[49] *The prescriptions laid down for Lake Vyrnwy were written more than 30 years ago, and the charity can challenge them if it has relevant evidence.*

[50] *Given the market prices for lamb and beef (see ahdb.org.uk/beef-and-lamb-at-a-glance) it is not certain that with this number of sheep and cattle the farm can make a surplus, given its six full-time and one part-time staff, and costs of operation.*

Some of the about 1,000 hectares of restored blanket bogs on the uplands RSPB farm. Just after the author took this photograph a snipe flew out of the rushes to the right

[51] *Interestingly, surveys conducted by the charity have found more areas of blanket bog than expected.*

[52] *Including two new areas of moorland that the RSPB has taken over responsibility for, where large numbers of conifers have been removed.*

a small herd of feral horses. When Severn Trent managed the in-hand farm there were some 7,500 breeding ewes on the farm which led to a shared concern that some areas of the estate were being over-grazed leading to loss of habitat. Initially Hafren Dyfrdwy and RSPB agreed to reduce the number of breeding ewes to around 3,500 in circa 1996, followed by the introduction of cattle and ponies to vary the grazing impact. The subsequent reduction in sheep numbers to the current levels took place in 2022 and was primarily driven by the recent peatland restoration programme.[51] The RSPB wants to move to a more dynamic approach to grazing management, using sheep and cattle in a deliberate way to manage and improve habitat, including trying to reduce bracken coverage.

Hafren Dyfrdwy supports the use of cattle for grazing impact if water quality risks are properly managed to avoid polluting the lake. Managing these risks, for example by housing the cattle over winter, limits the RSPB's scope for using the cattle for year-round habitat management. GPS collars are being trialled with the cattle to establish how effective they are at restricting cattle to defined areas, without the need for large amounts of fencing.

Like all upland areas, the farm is a challenging environment to manage. Hafren Dyfrdwy, as owner of the area, has an agreement with NRW to manage the land to ensure that its SSSI and SPA designations are met, but responsibility for delivering against the agreement is delegated to the RSPB which implements the necessary management plan, while Hafren Dyfrdwy remains ultimately accountable. Work to improve the habitat on the farm's moorlands, especially the blanket bog, has been ongoing since the early 2000s. Between 2007 and 2011 there was a programme of moor drain blocking which was effective in increasing the amount of wetland, but the scheme is now regarded by the RSPB as having not been extensive enough. The peatland restoration programme was relaunched in 2020, when surveys had shown that there were c. 1,500 hectares of degraded bog that could be restored. The programme is one of the biggest in Wales. There is now a plan, with a timescale of more than 30 years, to re-create a very large area of naturally-functioning blanket bog.[52]

Additionally, some 1,270 hectares of land in the valleys higher upstream have been identified for native broadleaf tree establishment to produce riparian corridors, which will soften the transitions from moorland to meadow and improve habitat as well as helping to reduce gradually the extent of bracken dominance – a long-term, low-intensity strategy. A programme of monitoring is in place covering vegetation, hydrology, biodiversity and carbon sequestration.

The charity has seen some positive impacts resulting from its management of Lake Vyrnwy. For example, the reduction in the number of sheep in the mid-1990s initially resulted in an increase in black grouse and hen harrier numbers (see page 32 for the numbers of these species that the RSPB has recorded).[53] There have been increases in the numbers of hobby (attracted by the dragonflies around the increased areas of blanket bog), pied flycatcher, redstart, wood warbler, willow tit, and a golden plover was seen in 2024 for the first time in over 40 years following rewetting work.

The RSPB manages Lake Vyrnwy with six core staff (two managers, an office manager, two wardens, and a monitoring officer) and a farm team consisting of a farm manager, four farm workers, one estate worker, and a part-time administrator. There is also a team of volunteers of which c. 10 work on site nearly every week. Occasionally, young people doing their Duke of Edinburgh Award will work on the site for the volunteering part of the scheme. There are also four staff working on, and externally funded by, the peatland restoration project, and two staff working on a partnership community engagement project called Vibrant Vyrnwy, funded by the National Lottery Community Fund. Of the people who work or volunteer for the RSPB, around 20 of them live locally, within 20 miles of the lake. Additionally, the RSPB makes extensive use of contractors at Lake Vyrnwy, most of which are locally based. Outdoor contractors have carried out work including peatland restoration (two local farming families carry out this work which has cost around £2 million over the last four years),[54] farm work (hedging, tupping, baling, etc.), tree clearing and planting, bracken management, track repair and maintenance, building maintenance,[55] and predator control (of foxes to help protect ground-nesting birds including black grouse, hen harrier, merlin and curlew).[56] It is these contractors who do the great majority of work involved in the practical management of the reserve.

The RSPB has established a tree nursery and through the Vibrant Vyrnwy project providing training opportunities for members of the community and people from farther afield in habitat management, etc. A small-scale scheme with Mencap (also part of the Vibrant Vyrnwy project funded by the National Lottery) enables people with a range of additional needs to visit the reserve and take part in conservation activities, managed by Mencap staff and two local volunteers.[57] In addition, the RSPB trains its volunteers (and other people) in skills such as building stone walls and using scythes.

[53] *The RSPB's site manager pointed out that when it took over management of the in-hand farm, the number of red-listed birds initially increased, contrary to what some outsiders have maintained (interview with the author, 29 August 2024).*

[54] *The peatland restoration programme is funded from a range of sources including Hafren Dyfrdwy and the National Peatland Action Programme in Wales.*

[55] *As part of the Farm Business Tenancy the RSPB is responsible for maintaining buildings on the farm.*

[56] *The RSPB does carry out predator control but its aim at Lake Vyrnwy is to find complete, holistic, landscape-scale solutions that enable red-listed (and other) birds to thrive, rather than just rely on control of predators.*

[57] *Small-scale studies of social prescribing of this type have suggested that individuals experience some benefits (Makanjuola et al, 2023), although larger studies point out the lack of control groups in most studies of social prescribing interventions means that quantitative evidence of benefits is hard to find, they acknowledge that qualitative evidence of benefits is widespread (Garside et al, 2020).*

[58] *The charity has a more remote relationship with United Utilities.*

[59] *Again, this important point is not appreciated by some commentators on the work of the RSPB at Lake Vyrnwy.*

Relations with the local, and wider, community have been improved in recent years, and the RSPB has worked hard along with Hafren Dyfrdwy to engage the local community in dialogue and activities in such projects as Vibrant Vyrnwy. As noted above, the RSPB and Hafren Dyfrdwy are both members of the Lake Vyrnwy Stakeholders Forum, along with the Community Council, Lake Vyrnwy Marketing Association, and the hotel. The Forum meets monthly to keep all parties updated on members' plans, to raise and discuss concerns so that problems can be resolved and misunderstandings can be avoided. The Forum also provides a means to get 'whole valley' support for joint bids for external funding of projects. The Lake Vyrnwy Experience Project, a 2021 bid to the Heritage Lottery Fund, was unsuccessful even though it had support from all members of the Forum. However, many ideas developed by the Forum that were included in that bid have been realised with funding from other sources. Examples include peatland restoration, improvements to walking trails and the Vibrant Vyrnwy project. eg. the Brand Vyrnwy included the tree nursery mentioned above.

The RSPB's philosophy for the management of Lake Vyrnwy is about achieving results over decades, rather than short-term three-to-five year periods.

The RSPB is, of course, one of a number of important stakeholders at Lake Vyrnwy and it must take account of the aims and priorities of Hafren Dyfrdwy and United Utilities, and its other partners. Most importantly, Hafren Dyfrdwy and United Utilities have a water catchment management agreement and, due to its FBT, the charity has an obligation not to damage water quality that is captured in its agreement with Hafren Dyfrdwy. The charity works particularly closely with Hafren Dyfrdwy[58] in a relationship governed by written agreements, with frequent and regular liaison with Hafren Dyfrdwy's site manager. Encouragingly, the objectives of Hafren Dyfrdwy and the RSPB are well aligned, especially those around habitat protection and maintenance, sustainable management for public goods and community engagement. Indeed, Hafren Dyfrdwy sees Lake Vyrnwy as a 'jewel in its crown' providing it with an opportunity to demonstrate good stewardship and make the landscape work for the delivery of public goods, such as water quality, carbon sequestration and wildlife. Hafren Dyfrdwy has a commitment with the regulator (Ofwat) to invest in biodiversity and has improved habitat in some areas through peat restoration, clearing conifers from some areas, and planting broadleaf trees in others. Hafren Dyfrdwy and the RSPB are very conscious of the risk of wildfire. In the past, heather has been mown to reduce the potential fuel load, as well as to create different heights of heather, important for biodiversity. The work done, and being done, to wet the moor is expected to reduce fire risk, as are mowing and managed grazing. Hafren Dyfrdwy is leading a study to identify wildfire risk in the area.

The RSPB's philosophy for the management of Lake Vyrnwy is about achieving results over decades, rather than short-term three-to-five year, periods.[59] It has a strong sense of custodianship for the area it manages that the current reserve manager likens to the custodianship seen in private estates; the aim is continually to improve the habitat and resulting biodiversity so that successors 'inherit' an improved landscape. The land the RSPB manages goes from hay and flower meadows, through broadleafed woodland, up to heath and then blanket bog. The charity wants each of these distinct 'meadow to moorland' zones of vegetation to provide high-quality habitat supporting a wide range of plants and animals, especially birds.

The Management of Lake Vyrnwy 1977 to 2024: **The Results**

In the UK, areas of land with features that make them rich in biodiversity can be designated SPAs and/or SACs.

An SSSI is a conservation designation denoting a protected area in the UK. SSSIs are the basic building blocks of site-based nature conservation legislation and most other legal nature/geological conservation designations in the UK are based upon them, including national nature reserves, Ramsar sites, SPAs, and SACs. An SPA is a designation under the European Union Directive on the Conservation of Wild Birds. Under the Directive, Member States of the European Union have a duty to safeguard the habitats of migratory birds and certain particularly threatened birds. Together with SACs, the SPAs form a network of protected sites across the EU, called Natura 2000. An SAC is defined in the European Union's Habitats Directive (92/43/EEC), also known as the Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora. SACs exist to protect the 220 habitats and approximately 1,000 species listed in annex I and II of the directive, which are considered to be of European interest following criteria given in the directive. When the UK left the EU, SPA and SAC designations were retained under the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales, and similar regulations in Scotland and Northern Ireland. SACs, together with SPAs, form part of the UK's national site network.

SPAs and SACs must have site-specific conservation objectives, and land management operations on SSSIs are subject to restrictions unless consultation with relevant authorities has taken place and approval has been granted. Landowners have a responsibility to manage SSSIs, SPAs and SACs so that they at least retain the biodiversity that caused them to be thus designated in the first place. Given that all SSSIs, SPAs and SACs in the UK are a result of management regimes operating over many years, the implication is that these management regimes should be retained and enhanced, rather than replaced or discontinued. However, it is possible for landowners and managers to negotiate limited changes to the ways areas have been managed with the relevant authority. As noted above, the RSPB did not get involved in managing any part of the Lake Vyrnwy area until 1996, although from 1977 it had an agreement to provide advice on the management of the northern area of the estate.

Most of the RSPB reserve at Lake Vyrnwy at the northern end of the lake is designated as an SSSI, an SPA,[60] and an SAC. The area is part of the Berwyn, which reaches from the A5 near Llangollen in the north east to the A458 near Mallwyd in the south west. The Berwyn has areas of upland rising to 827 metres above sea level and includes the upper catchments of several water courses including the River Vyrnwy. The Berwyn was first designated as an SSSI in 1957.

[60] *The SPA designation for the Berwyn dates from 1998.*

Black grouse have become increasingly rare at Lake Vyrnwy

[61] *The SSSI citation for the Berwyn describes it as "the most important upland in Wales for breeding birds".*

[62] *naturalresources.wales/media/670888/Berwyn%20man%20plan%20(E)%20(table%20revis%2010.09.09).pdf The CCW became part of Natural Resources Wales (NRW) on 1 April 2013.*

[63] *The ffridd, or upland fringe, is made up of a collection of diverse habitats including some or all of the following: scattered trees and small woodlands, bracken, heather and bilberry heath, wet and dry unimproved grassland, bog, scree and rock. It can be an incredibly diverse habitat, with the variety of vegetation communities and structural features making it very important to a wide range of wildlife. Source: farmwildlife.info/how-to-do-it/existing-wildlife-habitats/upland-fringe-ffridd/*

[64] *Ibid.*

[65] *Sphagnum moss does form peat, but it is not essential in peat formation. The Falkland Islands have very large areas of peat, but no sphagnum, as James Fenton, CEO of the Falkland Islands NGO Falklands Conservation 2011-2013, points out.*

It is of national and international importance for its moorland breeding birds[61] and vegetation, particularly *Calluna*-dominated heath and blanket mire. It also contains a colony of a rare moth, the Welsh clearwing. The Core Management Plan for the Berwyn, produced by the Countryside Council for Wales (CCW), dates from 2008[62] and divides the area into management units to enable practical communication about features, objectives, and management, and certain land management operations are only permitted after consultation (with NRW in the case of the Berywn). The Plan also describes how the habitats found in the Berwyn area have been shaped by agriculture, grouse shooting, forestry, mining/quarrying and recreation and: "This range of habitats supports a characteristic and varied breeding bird community which includes merlin, hen harrier, peregrine falcon, curlew, red and black grouse and short-eared owl. These species rely on the heathland, acid grassland, and rushy pasture of the ffridd[63] supporting an adequate supply of prey species to maintain successful breeding."[64]

In 2005, nine years after the RSPB gained responsibility for managing Ty-Llwdy Farm, the CCW specified how it would like to see special features on the Berwyn develop. Its description included:

"The hillsides, sheepwalks and ridges of the mountains are a mosaic of blanket bog and dry heath. These habitats grow on peat formed by the sphagnum mosses[65] which form a ground cover layer throughout much of the range and are in turn overlayed by heather and other low shrubby plants such as bilberry."

"The agricultural, foresty and game management critical to the economic well-being of the Berwyn community and the maintenance of its wildlife interest should be undertaken on a sustainable basis whereby these activities are compatible with the maintenance of native habitats and species, and wherever possible contribute to it."

"Areas of blanket bog should exhibit a high water table consistent with the retention of an actively growing sphagnum layer."

"Areas of moorland-edge native broadleafed woodland with a diverse species and age structure provides sufficient suitable habitat to maintain thriving species of the Welsh clearwing moth, and other characteristic species. However, trees are largely absent from the open heath with limited number of saplings permitted to establish themselves along the moor margins where they provide habitat for moorland edge birds such as black grouse."

"The range of habitats across the range should maintain healthy breeding populations of characteristic upland bird species…"

"Populations of legally controllable predator species such as foxes and carrion crows should be at a level such that nest predation does not pose a threat to the maintenance of healthy populations of ground-nesting birds."

The CCW pointed out that although the Berwyn is an excellent place for wildlife, it would only remain so if the necessary management continued. As noted above (and worth stressing again), as all SSSIs, SPAs and SACs in the UK are a result of management regimes operating over many years. These management regimes should be retained and enhanced, rather than replaced or discontinued. The need for effective management of the Berwyn was highlighted by Warren and Baines (2014) who identified that between surveys in 1983-5 and a further survey in 2002 some bird species had increased in numbers, but many species of ground-nesting birds had declined, see Table 3. Red grouse, not included in the table, had been in long-term decline. Their numbers were

Table 3: Increases and decreases in bird species on the Berwyn 1983-5 and 2002 (Warren and Baines 2014)

Bird Species	Percentage Increase	Percentage Decrease
Lapwing		100
Golden plover		90
Curlew		79
Hen harrier		49
Carrion crow	529	
Raven	308	
Buzzard	150	
Peregrine	700	
Merlin	No change	
Red kite	No change	
Meadow pipit	103	
Whinchat	123	
Stonechat	986	
Ring Ouzel		80

highest in the early 1900s, with the most shot being an average 250 birds per square kilometre. This number gradually fell, with sharp drops during the First and Second World Wars. The number rose a little to 43 birds per square kilometre in the 1970s, but fell to fewer than five shot per square kilometre by the 1990s. Red grouse were also included in the bird surveys in 1983-85 and 2002, with numbers halving between the two surveys.

Worryingly, Warren and Baines noted that red grouse were occupying 40% fewer study plots by 2002, and curlew had been found on 57% fewer plots, whereas carrion crow numbers had increased by 526%. These figures suggest that the CCW's specification for the management of the Berwyn had not been met. More recently, in 2023, Keith Offord, an ornithologist who has conducted continual monitoring of birdlife on the Berwyn since the 1970s was quoted as saying,

"*I used to take curlew for granted and could never have predicted the disastrous decline in their breeding population, which has taken place over recent decades. I have no doubt that the burgeoning corvid population, especially on surrounding farmland and forest, has been a significant driver of this decline. Other ground-nesting moorland species including hen harrier are equally at risk from corvid and fox predation.*"[66]

The RSPB has previously noted that "curlew population changes over an eight to 10-year period were positively related to gamekeeper density (a surrogate of predator control intensity)" (Douglas et al, 2014). However, the Game & Wildlife Conservation Trust (GWCT) has claimed that predator control at Lake Vyrnwy (and at Pale Moor, a nearby moor run by NRW) has not been carried out effectively, and contrasts grouse numbers at these sites with numbers at two moors in the Berwyn where grouse management is carried out, see Table 4. The GWCT suggests that as red grouse are now red-listed in Wales, they can be regarded as an indicator species for the health of Welsh uplands.[67]

Of course, grouse numbers can fluctuate greatly from year to year depending on the weather. According to the Reserve Manager at RSPB Lake Vyrnwy, in 2024 there were between 120 and 150 pairs of red grouse on the area it manages, which suggests there were between 5.3 and 6.6 grouse per square kilometre.

Need for Appropriate Management

The need for appropriate management of upland areas in Wales was highlighted by the RSPB in 1995 in its publication 'Silent Fields: The Current Status of Farmland Birds in Wales'. The authors pointed out that: "Traditional shepherding on the hill sheep-walks controlled grazing to utilise all the grazing fairly evenly." However, a reduction in number of shepherds meant that in many places "sheep now graze at will and tend to concentrate on some areas and ignore others, leading either to over- or under-grazing". Additionally, regular burning of hill grazings by shepherds had "declined or ceased, partly because of the fire risk posed by afforestation". They observe that such significant management changes have contributed to a significant extent to the degradation of moorland habitats in Wales. The changes may be most important on heather moor where grouse management has been replaced by sheep farming. This fairly quickly leads to reversion to species-poor grassland. Examples of this loss are provided by the Berwyn Mountains, where 44% of the heather moor has been lost since 1946.[68]

When discussing the impact of afforestation, 'Silent Fields' pointed out that tree planting in upland areas results in a major loss of "breeding and foraging areas for a wide spectrum of bird species that are dependent on open moorland habitats", including red grouse, hen harrier, golden plover and meadow pipit, and at least 11 other species (although afforestation benefits other types of bird species including goshawk, tawny owl, nightjar and a range of passerines). The overall impact of afforestation on the uplands was described as negative, because "many of the species which enjoy the benefit of expanding ranges into these new forests are ones which are already numerous in the lowlands. Those that are displaced from moorland are mainly species about which there is already considerable concern."[69]

Regarding the predation of ground-nesting birds, the RSPB observed that changes in farming practices, especially in lowland areas, have reduced habitat for ground-nesting birds and that, "in these conditions there is accumulating evidence, both systematic and anecdotal, that nest predation seriously depletes productivity, thus contributing to population declines". The authors point out that numbers of carrion crows had trebled between 1962 and 1995, and fox numbers had also increased dramatically, and they make a case for legal predator control. In support of this position, they cite an example from Ireland Moor in Radnorshire: "Here a shooting syndicate took over the moorland in 1990 and installed a keeper to do moorland management and predator control. Since then, 900 to 1,000 corvids have been killed in a three-month period in spring each year and some 120 foxes have been shot annually. As a result, by 1994 the spring population of red grouse had risen from between four and six birds per square kilometre to approximately 16 to 18 birds per square kilometre and lapwing (eight pairs) are now breeding again on the moor after having disappeared. Curlews have increased from one pair to 10 pairs in the same period. Although it is not clear whether the restoration of these two important wading birds is due to predator control or habitat management, this is still an impressive and significant result."[70] It is worth noting that in 1995, the RSPB seemed not to be opposed to driven grouse shooting and recognised that it had some benefits for ground-nesting birds, a position that seems rather different to that which it has adopted in recent years.

Moor	Grouse management	Grouse per km2
Vyrnwy	No	4.2
Pale	No	6.7
Ruabon	Yes	16.1
Llanarmon	Yes	15.8

Table 4: Grouse numbers on four Berwyn moors

Historically, the Lake Vyrnwy Hotel & Spa has had sporting rights over much of the reserve area. Up to 1995 moorland on the reserve was managed by staff from the hotel. Controlled burning was carried out by hotel personnel, assisted after 1991 by RSPB staff. However, a decline in red grouse numbers[71] meant that shooting on the moorland was no longer viable and the hotel ceased managing the moorland in 1995. From 1995 to 2003, the RSPB continued controlled burning, as well as mowing,[72] to provide a mosaic of different ages and structures of vegetation, especially heather. However, controlled burning ceased in 2003 following decisions taken by the water companies. The RSPB also continued the legal management of predators that the hotel's gamekeepers had undertaken. The gamekeepers were engaged to continue to control crows, magpies and foxes. In addition, until the 2004 Hunting with Dogs Act made it illegal, a local fox destruction society targeted foxes in forestry areas.[73]

In 2007 the RSPB produced a management plan for Lake Vyrnwy. The long-term ecological vision the charity sets out in the plan was clearly designed to ensure that the management of the reserve delivers

[66] *Quote in Real Wilders, page26, see gwct.org.uk/media/1384480/Real-Wilders-LR.pdf*

[67] *Source: gwct.org.uk/media/1384480/Real-Wilders-LR.pdf*

[68] *Extracts are from page 9 of Silent Fields.*

[69] *Extracts are from page 13 of Silent Fields.*

[70] *Extracts from pages 16, 17 and 18 of Silent Fields.*

[71] *One interviewee claimed that the decline in grouse numbers was largely due to a lack of investment in moorland management.*

[72] *Mowing on the moorland began in the mid to late 1990s.*

[73] *The local society was Berwyn Fox Destruction Society. Fox destruction societies operated where there were large areas of unenclosed land, and it was not possible to fix individual responsibility for fox destruction. Fox destruction societies in Wales received payments for each fox killed from the Ministry of Agriculture, see hansard.parliament.uk/Commons/1948-11-22/debates/c9a620b0-cd38-49f0-ba8a-0c23c7bb02db/FoxDestructionSocieties*

outcomes that are expected from an SSSI. It is worth citing this vision in full:

"This large landscape-scale reserve of 100 square kilometres, with over 50 square kilometres of open moorland within the Berwyn SPA and SAC, will be managed to improve the condition and extent of the special features identified in these designations.

"By an ambitious programme of ditch blocking, controlled grazing and heather management, this vast area of moorland will support 2,949 hectares of active blanket bog and 1,639 hectares of dry heath. The surrounding fringe habitats of ffridd, acid grassland, broadleaf woodland, conifer plantation and farmland will be managed and linked to the moorland to create a thriving, integrated and sustainable moorland ecosystem capable of supporting at least five pairs of hen harrier, seven pairs of merlin, 25 lekking black grouse, 200 pairs of red grouse as well as extensive sphagnum lawns, pools and associated lower plants and invertebrates. In conjunction with the management above, the return of grazing cattle and ponies to the moorland will help curlew to return as a moorland breeding species with up to 20 pairs after 25 years.

"The demonstration value of the farm will increase over the coming years, and it should always be at the forefront of agricultural practice in terms of animal husbandry, pollution control, and marketing. It will be open to new techniques and ideas, while continuing to graze the moorland areas to enhance the conservation value and remain a viable business enterprise.

"The RSPB, working with Severn Trent Water, will sustainably manage a successful upland hill farm, moorland, woodland and major countryside visitor attraction at Lake Vyrnwy. We will continue to develop our visitor facilities to offer an excellent wildlife experience to RSPB members, especially families, and seek to enhance that experience in order to attract, and engage with, a range of non-members.

"The people who live and work in the area, and those that visit for enjoyment, will be inspired by the magnificent landscape, enjoy the birds and wildlife and understand and value the role of the RSPB and STW."

The long-term vision set out in 2007 is appropriate given the RSPB's duty to manage an area of national importance, and it underpins the current management of the area as described by the Reserve Manager. Impressive progress has been made since 2007 with increasing the amount of healthy blanket bog on the uplands. The 2007 vision also contains objectives with specific targets, which is impressive as it means the RSPB would be able to measure its effectiveness at managing the reserve, although the specific targets for black and red grouse are noticeably lower than those set out in the vision. The objectives related to raptors and ground-nesting bird species are particularly interesting, and will (again) be cited:

Raptors
To maintain and if possible increase the breeding population of hen harrier, peregrine and merlin (the designated SPA features) by appropriate management.

Targets
- Increase numbers of breeding/ territorial pairs of hen harrier from three to five with a mean productivity of 2.5 young per pair,
- Increase numbers of breeding/ territorial pairs of merlin from five to seven and measure productivity (five year mean),
- Maintain three breeding/territorial pairs of peregrine (five year mean).

Ground-nesting birds
To maintain in favourable condition the SSSI breeding bird assemblage associated with upland moorland and grassland without water bodies, especially black and red grouse, curlew and ring ouzel.

The hen harrier is a key species for the RSPB

[74] *Some moor owners might regard the targets for black and red grouse as ambitious, given that numbers of both species can collapse due to adverse weather conditions, no matter how effective habitat management and predator control measures are. However, it is noted that the targets are five year means. It should be noted that the number of red grouse on the reserve in 2024 is higher than 60 pairs. It should also be noted that the reserve covers a very large area and that grouse density is lower than on nearby moors that are managed partly for grouse shooting.*

[75] *See richardpgibbs.org/2013/10/rspb-lake-vyrnwy.html It should be noted that Mr Williams' comments applied to the whole Berwyn, not necessarily that part of the Berwyn that the RSPB was managing.*

Targets

- All species currently qualifying as part of the assemblage continue to do so in numbers no lower than the most recent survey (2000) data,
- A five-year mean of 15 lekking black grouse on the reserve, with an annual productivity of two to three young per hen. Productivity to be measured using annual count with dogs,
- Red grouse numbers on the reserve drop no lower than a five year mean of 60 pairs (the population estimated from the sample survey carried out in 2000) with an average productivity of more than, or equal to, 3.5 young/hen,[74]
- Breeding/territorial curlew numbers on the reserve increase from two to a five year mean of five pairs,
- Minimum two pairs of ring ouzel breed regularly on the reserve.

The initial implementation of the management plan seems to have been regarded as successful by the RSPB. In the BBC's Countryfile programme, broadcast on 20 March 2011, the RSPB's then Senior Site Manager said: "Particularly on the moorland, which is the most important conservation habitat on the farm, most of the species have either gone up in number or remained stable; in contrast of some parts of Wales where these populations have gone down. So we're very pleased with what we've managed to achieve on the moorland." However, in contrast to this statement just two years later Mr Iolo Williams (one of the authors of the RSPB's 'Silent Fields' report (1995) gave a speech (23 May 2013) in which he compared the Berwyn he had known as a young man in the 1970s with its condition in 2013:

> And the hay meadows were incredible places then full of flowers, full of grasshoppers. That's what I remember.
>
> **Mr Iolo Williams**

"Up on the moors, up on the Berwyn moors, looking at hen harriers and merlin and black grouse and these amazing carnivorous plants, sundews and butterwort, and curlew, the bubbling call of the curlew… And the hay meadows were incredible places then full of flowers, full of grasshoppers. That's what I remember. Swallows and house martins swooping low, feeding on the insects and the sound, the constant sound, of grasshoppers… (now, in 2013) the moors, still a few lovely things to see up there. The hen harriers are there, the merlin are there. The curlew have gone. Twenty-four odd pairs when I used to live there. Three now. I was talking to the warden. I was up there just yesterday. Three pairs left. The valleys are quiet.

"No point going up there looking for birds now, they are virtually all gone."[75]

Interestingly, Mr Williams did not blame farmers, forestry works, the water companies or the RSPB for the collapse in bird numbers. Rather he blamed the grant system and:

"Those grey, fat salaried spineless bureaucrats, who sat by and watched all of this happen. People in key positions, who could have made a big difference, who were so concerned with moving up that career ladder, adding to that great big fat pension, rubbing shoulders with the right people, going to the right meetings, saying the right things, that they either forgot about, or didn't care about, what was going on around 'em. Those are the ones that I am ANGRY with."

It is unreasonable to blame bureaucrats for the management actions of water companies and the RSPB. They were the organisations responsible for managing the moor to maintain its SSSI, SPA and SAC status and, as will be shown later in the report, they have been receiving large sums of taxpayers' money for managing Lake Vyrnwy.

The RSPB's management plan for Lake Vyrnwy for the period 2016 to 2021 evolved the 2007 vision and and gave an update of the breeding populations of important bird species. The new vision was as follows:

"The Lake Vyrnwy reserve comprises over 10,000 hectares[76] of various habitats including blanket bog, dry and wet heathland, ffridd, woodland and meadows. It plays host to populations of priority species such as black grouse[77], hen harrier, merlin, curlew and the Welsh clearwing moth. Much of the land is designated as an SAC, SPA, SSSI and NNR. The RSPB will work in partnership with organisations such as Severn Trent Water, United Utilities, Natural Resources Wales, and tenant farmers and other local stakeholders to protect and enhance the conservation status of these habitats and species.

"The estate will deliver multiple benefits for conservation, water quality, financially-viable farming, economic benefits and learning opportunities for the local community and a range of other ecosystem benefits such as ecotourism, carbon capture, flood attenuation, and social benefits. As the largest landholding in the RSPB's North Wales Moors Futurescape, Lake Vyrnwy will play a significant and crucial role in delivering and demonstrating the benefits of landscape-scale conservation in the uplands. The Vyrnwy estate will be an exemplar of the Welsh Government's natural resource management approach and will demonstrate sustainable development in upland Wales with excellent partnership working."

This vision is both less specific, for example about land management activities and bird numbers, and more challenging, for example by introducing 'ecosystem service benefits', which can be hard to measure.

The 2016 management plan provided a snapshot update on important bird species (ie. those designated an SSSI and SPA feature) and their breeding populations. The information contained in the plan is shown in Table 5.

[76] *Although the RSPB's management agreement only covers just over half of this 10,000 hectares.*

[77] *Red grouse are not listed in the vision of the 2016 management plan, although they were in the 2007 plan. It is not clear why this is the case.*

[78] *The RSPB points out that Lake Vyrnwy has the most southerly black grouse population in the UK; it is at the geographical margin for this species.*

Table 5: Important bird species and breeding populations (from RSPB Lake Vyrnwy Management Plan 2016-2021)

Species	2015	2016
Hen harrier (pairs)	4	3
Merlin (pairs)	1	0
Black grouse (lekking males)	5	11
Red grouse (individuals)	210	151
Curlew (pairs)	3	2
Peregrine	1	1

The RSPB's counts of curlew and black grouse[78] have taken place on most years since 2000. This data set is valuable as it provides a medium-term picture of bird numbers which enable trends to be identified. Trying to draw conclusions from one or two years' worth of data is, of course, impossible given how bird numbers can change due to weather, etc. Table 6 shows the number of curlew and black grouse on the Lake Vyrnwy reserve between 1980 and 2024, together with targets for their numbers specified in the 2007 management plan (a blank cell means no data is available).

Year	Curlew numbers	2007 curlew targets	Black grouse lekking males	2007 black grouse lekking male targets
1980	32 pairs			
1984-86	18 to 21 pairs			
1987-2000				
2000			6	
2001			9	
2002	2 pairs		11	
2003			7	
2004			8	
2005			8	
2006	1 to 2 pairs		18	
2007	2 pairs	2 pairs rising to a five-year mean of 5 pairs	18	Five-year mean of 15 lekking black grouse
2008	5 pairs, fledged 4 young		20	
2009	4 pairs, fledged 1 young		11	
2010	3 pairs, fledged 1 young		7	
2011	3 pairs, fledged 1 young		19	
2012	3 to 4 pairs	Mean of 5 pairs	6	Mean of 15 lekking males
2013	4 pairs, fledged 1 young	Mean of 5 pairs	6	Mean of 15 lekking males
2014	3 to 4 pairs	Mean of 5 pairs	6	Mean of 15 lekking males
2015	2 pairs	Mean of 5 pairs	5	Mean of 15 lekking males
2016	2 pairs, fledged 1 young	Mean of 5 pairs	11	Mean of 15 lekking males
2017	2 pairs	Mean of 5 pairs	1	Mean of 15 lekking males
2018	2 pairs	Mean of 5 pairs	0	Mean of 15 lekking males
2019	1 pair	Mean of 5 pairs	5	Mean of 15 lekking males
2020	No count due to covid			Mean of 15 lekking males
2021	3 adult birds, possibly 2 nests	Mean of 5 pairs	2	Mean of 15 lekking males
2022	3 adult birds	Mean of 5 pairs	3	Mean of 15 lekking males
2023	3 adult birds, possibly 1 nest	Mean of 5 pairs	Data not known	Mean of 15 lekking males
2024	1 pair nested (on farm next to RSPB farm, not known if fledged young)	Mean of 5 pairs	7	Mean of 15 lekking males

Table 6: Curlew and black grouse lekking males counted at Lake Vyrnwy[79]

RSPB target numbers for curlew have not been achieved in most years

What the data in Table 6 reveal is a long-term decline in curlew in the Lake Vyrnwy reserve, and that black grouse numbers have failed to achieve the target set in the 2007 Management Plan, and may be on a long term decline.[80] Although there is a great deal more to RSPB Lake Vyrnwy than curlew and black grouse, these birds are part of the SSSI designation goals for the management of the reserve. As noted above, the CCW's 2005 specification for the Berwyn (of which RSPB Lake Vyrnwy is nearly all part of) included the following statements:

"The range of habitats across the range should maintain healthy breeding populations of characteristic upland bird species…"

"Populations of legally controllable predator species such as foxes and carrion crows should be at a level such that nest predation does not pose a threat to the maintenance of healthy populations of ground-nesting birds."

The obvious question is whether habitat management and legal predator control have been carried out effectively,[81] or whether other factors have meant that the RSPB has been unable to achieve the targets it set?

"Populations of legally controllable predator species such as foxes and carrion crows should be at a level such that nest predation does not pose a threat…" **The CCW**

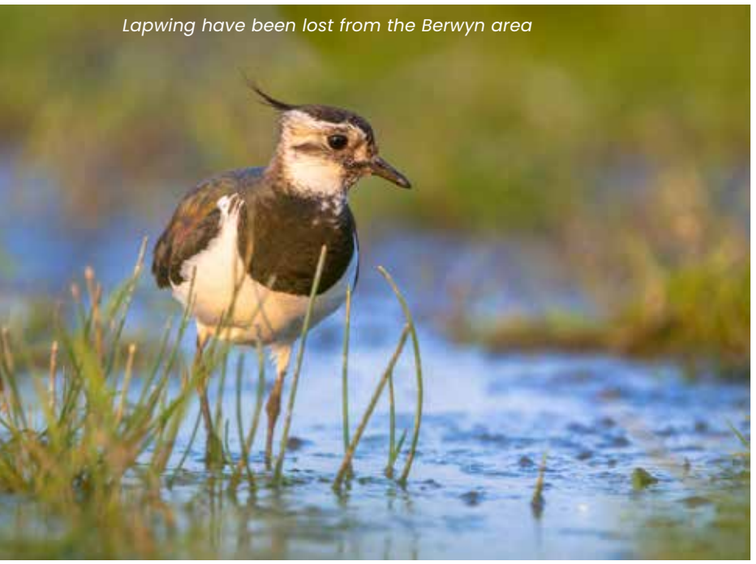
Curlew numbers in the reserve area were highest between 1980 and 1986 when the moorland was still managed for grouse shooting, although this does not mean that curlew can only thrive in areas where grouse shooting takes place. Between 1978 and 1986, when the RSPB only had an advisory role to Severn Trent, the curlew population was between 12 and 32 pairs, with an average (mean) of 24 pairs a year (Fisher and Walker, 2015)[82]. However, along with changes to the moorland management regime, curlew numbers declined during the 1990s and between 2000 and 2006 they were down to an average of two pairs. Fisher and Walker also point out that in the decade between 1996 and 2006 (the RSPB took over management of the

[79] *Data supplied by RSPB to Mr P Astor by email in response to enquiries and kindly shared with author by Mr Astor.*

[80] *It is worth noting that the black grouse at Lake Vyrnwy are the most southerly population in the UK. The RSPB reserve manager at Lake Vyrnwy wondered if the species could be on the geographical margin of their viability.*

[81] *The RSPB works hard to legally control some predators. In Orkney the charity is lead partner in a major stoat eradication programme, see community.rspb.org.uk/ourwork/b/scotland/posts/turning-the-tide-on-invasive-species-in-orkney and has even run an appeal to raise funds for its eradication programme, see rspb.org.uk/donate/orkney-native-wildlife-project Interestingly, a report in The Times newspaper quoted one 'insider' who claimed the very expensive £8 million programme was not effective, see thetimes.com/uk/environment/article/plan-to-wipe-out-stoats-from-orkney-has-flopped-say-whistleblowers-xh0whnrqt The programme was granted an additional £4 million in August 2024 (£2.5m from the National Lottery Heritage Fund and £1.5m from the Scottish government's Nature Restoration Fund) and, according to the BBC, the RSPB is seeking an additional £4 million to complete the programme over the next five years, which would double the cost of an already expensive programme. See Orkney project granted extra £4m to remove stoats - BBC News.*

[82] *Fisher and Walker worked for the RSPB when they wrote their paper.*



Lapwing have been lost from the Berwyn area

[83] *The author held a focus group with 11 keepers looking after grouse moors in the northwest of England. Each of them reported that their moors held significant numbers of curlew, lapwing, redshank and other waders. Four moors reported that they had hen harriers nesting on their moor.*

[84] *See gwct.org.uk/wildlife/research/upland-biodiversity/how-did-the-removal-of-grouse-moor-management-in-berwyn-spa-affect-other-birds/*

farm in 1996), curlew productivity only reached or exceeded the target (0.48 chicks per pair) needed to maintain the population in two years. They hypothesised that the Lake Vyrnwy habitat had become too uniform with "rank moorland vegetation and very short adjacent improved grassland", thus suggesting that Severn Trent and then the RSPB had not managed the moorland in a way that met the CCW's specification.

As the GWCT points out, in other areas of the UK where grouse moor management continues, such as the North of England, red grouse are still found at higher densities. Importantly, this is also the case for breeding waders such as curlew and lapwing (Baines et al, 2023), with one study finding three to five times higher densities on managed grouse moors than on unmanaged moorland.[83] Whatever the reasons, since driven grouse moor management stopped on Berwyn, breeding populations of several wader species have severely declined and lapwings have been lost altogether. The GWCT hypotheses that: "The combination of heather management, which keeps the vegetation at a shorter level that breeding waders prefer, and predator control, which eases the predation pressure on other species as well as grouse, combine to give better conditions for breeding waders on grouse moors. The decline of breeding waders in Berwyn is of major conservation concern, and to prevent more local extinctions such as that seen for lapwing, moorland management to support these species should be reintroduced."[84] Unsurprisingly, the GWCT's argument about the need for moorland management to conserve curlews and other ground-nesting birds is the same as the CCW's 2005 specification for the Berwyn.

There does seem to be a positive association between the regime of moorland management used on moors where grouse are shot and the populations of some species of birds. Results from the decade-long Langholm Moor Demonstration Project, described in Ludwig, Roos and Baines (2019), show that restoring grouse management was beneficial for three wader species; overall, curlew numbers rose by 10% per year on average, golden plover by 16% and snipe by 21%. Their results support the hypothesis that restoring effective predator control as part of moorland management can reverse declines of some wader species. The converse can be seen where integrated moorland management is lost. Analysis of upland bird species trends in southwest Scotland found declines in several upland bird species, including red and black grouse, golden plover, lapwing and curlew, and these are generally attributed to large-scale changes in land use, including afforestation, more intensive farming and reductions in grouse moor management (Whitehead, Hesford and Baines, 2018). The current distribution map of breeding curlew in the UK has been described as "almost a mirror image of the distribution of grouse moors, a correlation supported by numerous scientific studies – along with red-listed oystercatchers, lapwings, black grouse, golden plover and… hen harriers."[85] Grouse moors appear to act as 'source populations' for curlew and other waders (Baines et al, 2023), presumably because of the predator control carried out, which is increasingly important given the dramatic rise in the numbers of generalist predators such as carrion crows and foxes.

Douglas et al (2023) report the results of a RSPB study that tested whether habitat management and predator control improved curlew nesting success and breeding abundance. Their conclusions were that high mesopredator[86] (ie. fox, badger, stoat and crow) numbers meant that predator control (including lethal control) was "highly unlikely to be effective for curlew (or snipe) within agri-environment schemes, but could be for Northern lapwing". Their project, while impressive in design and methodology, only lasted for four years, which is a very short time for any environmental experiment (the Langholm project lasted 10 years). Their study sites (each around 10 square kilometres) were either on RSPB nature reserves or private farmland, and included enclosed grassland and open moorland, and are not comparable to areas where long-term, sustained predator control has been carried out, for example grouse moors. However, their recommendation that: "To make progress on wader recovery, it is imperative to understand the underlying drivers of high mesopredator densities and address these through landscape-scale intervention and policy changes," is sound. The importance of landscape-scale conservation is examined in more detail below.[87]

The management of moorland to support grouse numbers may also benefit some raptor species, one of the reasons for the SPA designation of the Berwyn. Ludwig, Roos, et al (2020) carried out a 27-year study as part of the Langholm experiment. They found that ground-nesting raptors, hen harrier and merlin, increased during periods of grouse moor management and had a higher proportion of successful nesting attempts.[88] Predation was the main apparent cause of breeding failure of both raptor species. In contrast, grouse moor management did not influence either abundance or breeding success of tree- and crag-nesting species,

[85] *gwct.org.uk/blogs/news/2022/april/the-legacy-of-a-cultural-landscape/*

[86] *There is no standard definition of 'mesopredators' but they can be described as mid-ranking predators in a food chain. Typically, they prey on smaller animals.*

[87] *See pages 54-58 and the discussion of the impact of Farmer Clusters.*

[88] *Defra announced in 2020 that there had been a 100% increase in the number of hen harriers in Britain (albeit from a low base) with moorland estates in the North of England used for grouse shooting being responsible for much of this increase.*

Merlin numbers increased during periods of grouse moor management

Red grouse

ie. peregrine, common buzzard, and raven. Buzzard sightings increased during the study, in line with their national recovery, whereas peregrine and raven showed little change in abundance. The results of this study suggest that management for red grouse can benefit both hen harrier and merlin.[89]

The 2005 CCW specification for the Berwyn highlighted the importance of legal predator control, thus the RSPB has employed contractors to kill foxes on the Lake Vyrnwy reserve for many years.[90] As is well known, opponents of grouse shooting[91] say that the levels of predator control on grouse moors are too high, without citing authoritative studies. However, opponents of predator control seem to ignore the fact that, as Mr Ian Newton,[92] a world authority on bird populations has pointed out, medium-sized generalist predators such as foxes and crows are unnaturally abundant on moorland.[93] Moreover, to maintain a diverse range of species (many of which are red-listed) the current evidence shows that effective, targeted and sustained predator control is an essential conservation tool, particularly for ground-nesting birds such as lapwings, curlews and hen harriers[94] that are highly susceptible to predation from species such as foxes and crow (Baines et al, 2023). The Founder and Director of Curlew Action,[95] Ms Mary Colwell, who was awarded a medal by the RSPB[96] for her work to raise awareness about the plight of the curlew, has said conservationists have to choose between having gamekeepers with curlew, or having no gamekeepers with no curlew. It is not surprising that gamekeepers agree with Ms Colwell,[97] but the work of the RSPB, both at Lake Vyrnwy and other locations in the UK, shows that it accepts the need for legal control of predators.

However, it is not as simple as saying that grouse moor management is good for all species of birds; different management practices affect bird species in different ways, a point clearly made by (Douglas et al, 2020). This situation can be illustrated by looking at the extent to which controlled burning is practised on an estate. It will be remembered that controlled burning at Lake Vyrnwy was continued by the RSPB from 1996, after the hotel ceased managing the moor, to 2003 when the practice ended, as a result of pressure from the water companies who were concerned about discolouration of the lake's water. Newey et al (2020)[98] found that occurrence of bird species varied with the amount of controlled burning carried out on moorland.[99]

Before drawing any lessons about controlled burning for Lake Vyrnwy (which the RSPB would be unable to carry out, even if it wanted to), it should be noted that Newey et al point out that their study was restricted to the area for which controlled burning data was available and that this was largely from areas where grouse moor management was known to be an important land use. Other areas where burning occurred – either controlled or wildfire – were not studied. Newey et al's study is impressive but did not have a control (for example, an area of moorland where grouse management does not take place but which is subject to burning). Therefore, it is not possible to say whether their findings are applicable to all situations. In addition, as they point out, species may be responding to aspects of moorland management other than controlled burning, and the occurrence of a bird species is likely to be influenced by the wider landscape. Indeed, the Newey et al study has the same limitations that the great majority of 'biodiversity' studies labour under: it was looking on a relatively small-scale area over a limited time and thus could not capture the overall mosaic impacts on a catchment/landscape scale on a medium- or long-term basis.

As noted above, the use of controlled burning as part of the management regime at Lake Vyrnwy ended in 2003. Therefore, vegetation management on the moorland has depended on grazing and cutting since then. A relatively short-term (four-year) study carried out in the Yorkshire Dales found that a combination of repeated cutting (three times over four years) and grazing was the most effective way of preventing the spread of Molinia[100] and restoring the heather-dominated moorland which provides a diverse range of plants and animals (Milligan et al, 2004). This project did not include controlled burning as a management option, so might have some relevance to Lake Vyrnwy. However, the Milligan et al study was carried out on a relatively small area and over a four-year timescale (as mentioned). Repeated cutting of the vast expanses of Lake Vyrnwy's moorlands is not carried out, and the RSPB has reduced the number of grazing animals due to its peat restoration work.

The longest-term comparison of moorland management techniques (controlled burning, cutting, and non-management) is being carried out by Heinemeyer. His 20-year project began in 2013 and, unusually, includes several sites which cover a range of peatland habitats with different conditions – especially drier to wetter bogs. It is designed with two catchments that are paired at each site meaning that they were similar enough before the study to be comparable. Therefore, differences measured throughout the project can be put down to the management that has been carried out, rather than inherent differences between the study areas. The project is not solely

89 *The merlin was returned to the Red-List of Birds of Conservation Concern in 2015 as its recovery from a historic decline had faltered. The Merlin Magic project, which ran from September 2021 to June 2023 involved both gamekeepers and raptor workers (people who look for raptors, very few of whom are involved in shooting). The project aimed to reconcile opinions about the conditions merlin need to thrive through promoting co-operative working. The results of the project were interesting: merlin were found to breed in relatively small patches of tall heather (and there was no lack of this habitat on moorland where shooting takes place); food availability did not seem to be a limiting factor; and the low survival rate of juvenile merlin appeared to be due to over-wintering mortality, when most merlin have moved to lowland farm and coastal land. Source: GWCT Review of 2023, see also workingforwildlife.co.uk/merlin-magic-fieldwork-update/*

90 *Crows have been trapped in the past at certain times of year, but the number of crows on the reserve has reduced significantly in recent years (for reasons unknown) and control of crows is not currently carried out.*

91 *See, for example raptorpersecutionuk.org/2023/12/04/predator-control-on-scottish-grouse-moors-causes-tremendous-unjustifiable-suffering-to-animals-say-academics/*

92 *en.wikipedia.org/wiki/Ian_Newton*

93 *countytimes.co.uk/news/18859955.powys-project-returns-breeding-ground-many-birds/*

94 *It is possible that nine hen harriers were predated by a fox on a RSPB reserve, c4pmc.co.uk/post/reports-emerge-of-nine-hen-harriers-predated-by-a-fox-on-rspb-s-bowland-reserve*

95 *curlewaction.org/*

96 *Mary Colwell was honoured with the RSPB's Medal, its most prestigious award at the charity's Annual General Meeting (AGM) on 15 October 2022.*

97 *See How Grouse Shooting is Saving Curlew, Fieldsports Channel youtube.com/watch?v=bfqbJkLQzyU*

98 *sefari.scot/sites/default/files/documents/Part%204%20-%20Biodiversity%20Impacts.pdf*

99 *Curlew and golden plover prevalence generally increased with amount of controlled burning, though golden plover occurrence peaked in the 41-60% burn category whereas curlew increased with greater percentages of controlled burning. This was particularly the case for these, and the other, bird species assessed by the hectad (10 kilometres x 10 kilometres) where sample sizes for squares representing controlled burning were very small. Merlin prevalence increased with increasing amount of controlled burning up to the 41-60% level, and then declined and were absent from the squares with a 81-100% level of burning, whereas kestrel was present at a consistent level across all controlled burning categories up to 81%. Interpretation of prevalence at the 81% plus controlled burning category is likely confounded by the small sample size. Both lesser redpoll and whinchat showed consistent levels of prevalence at low to moderate levels of controlled burning and showed increases in prevalence in the 61% and higher controlled burning categories. Lesser redpoll prevalence peaked in the 61-80% burn category and the species was absent in the 81-100% category, whereas whinchat was most prevalent in the 81-100% category.*

100 Molinia caerulea, *also known as purple moor-grass. It forms clumps up to 1.2 metres in height. See rhs.org.uk/plants/11169/molinia-caerulea/details*

[101] *See footnote 119.*

focused on biodiversity, but on carbon emissions, the water table, and the maintenance of healthy peatlands, ecosystem benefits which are part of the RSPB's vision for Lake Vyrnwy.

Heinemeyer (2023) provides a fascinating interim summary of his findings to date. The three management approaches were all able to support active, healthy peatlands in which peat can grow and carbon can be stored. Although burning and mowing release considerable amounts of carbon during or in the first years after management, this release was counteracted by increased absorption in later years. Heather management also seems to increase biodiversity and maintain higher water tables in the longer term, compared with areas of unmanaged heather. One conclusion is particularly interesting given the vision of the RSPB and the desire of the water companies to increase the water storage capacity of the moorland: where a site is wet enough to use prescribed burning, this seems the most suitable option to allow carbon storage, peat growth, reduce heather dominance, increase biodiversity and keep the peatland wet. *Where a site is drier, mowing could be more appropriate and may help keep the site wetter in the short-term* (author's italics). However, as noted above, United Utilities and Hafren Dyfrdwy are unwilling to permit controlled burning in the Lake Vyrnwy area as they are concerned about discolouration of the lake's water, and relatively little mowing is carried out at Lake Vyrnwy.

Controlled burning ceased at Lake Vyrnwy in 2003

Heinemeyer also concludes that unmanaged areas of heather had several drawbacks, including the water table dropping and peat drying out, with an associated carbon loss from decomposition, and higher methane emissions. Ageing heather gets less and less efficient at taking up carbon as its growth slows, but as it remains dominant, there is lower biodiversity at unmanaged sites. The slowing carbon uptake and increased emissions from unmanaged sites suggests that in the long-term peatlands will lose health and activity under this approach. Wildfire risk is also very likely highest on unmanaged areas and could have devastating impacts on all aspects.

The implications of the work of Milligan et al and Heinemeyer are that Lake Vyrnwy's moorlands need effective management if they are to maintain the biodiversity that caused them to be designated SSSI, SPA and SAC, and if they are to store carbon and water effectively. A blanket ban on controlled burning across the reserve area may not be the best way of achieving conservation and ecosystem services objectives, despite the objections of the water companies. Mowing, if it is to be an effective management tool, needs to be frequent and applied over large areas. Grazing is important for managing some types of vegetation and, if controlled, can improve biodiversity. The RSPB is trying to manage the upland habitat of Lake Vyrnwy, especially with its blanket bog restoration programme which is achieving its goals. However, the amount of grazing that can be carried out over such a large area with only 1,500 breeding ewes and 90 cattle is inevitably limited, and the area being mown each year is relatively small, as noted below.[101]

Has the Management of Lake Vyrnwy been Sufficient?

The RSPB has been managing the habitat at Lake Vyrnwy. This management is being achieved by using contractors under the guidance of the RSPB team, and some volunteers. The question is whether the type and amount of habitat management have been sufficient to achieve all its objectives? Before addressing this question, it must be remembered that although Lake Vyrnwy is referred to as an RSPB reserve, the charity does not own the land. Managing the vast Lake Vyrnwy area is a joint endeavour between the RSPB and two very large water companies. Lake Vyrnwy is, and can only be, just one part of each organisation's portfolio of complex interests that compete internally for resources. This point is important yet seems to be often misunderstood or ignored.

According to interviews with staff from the Lake Vyrnwy Hotel and the RSPB reserve manager, it was Severn Trent that insisted that controlled burning ceased in 2003 and it was United Utilities that limited the number

of cattle that farmers could graze on the moorland. In both cases, the water companies claimed they were concerned about water pollution, although it is unclear why pollution had not been deemed to be an issue for the 111 years between 1892 and 2003.[102] Hafren Dyfrdwy, as the owner of the land, and the RSPB used funds from an EU Life project[103] that ran from 2006 to 2011 to block drains (ditches)[104] on the moor to increase the area of wetland substantially and reduce run-off into the lake, which is commendable. As noted above, the number of sheep on the RSPB managed farm has been substantially reduced,[105] as part of the peat restoration and rewetting programme.

Restoring blanket bog by blocking drainage channels that have been dug on peatland as a result of agricultural policy, has been taking place on moorlands in the UK for c. 40 years. For example, some 16,000 acres (c. 6,470 hectares) of moorland was 'plugged' by the Raby Estate in County Durham over five to 10 years in the 1980s.[106] This 'rewetting' of peat to restore blanket bog has benefits for wild and farmed animals, including increasing insect and invertebrate life, an important food source for many waders and other moorland birds. Previous research has highlighted the climate benefits from rewetting degraded peatlands in terms of reduced greenhouse gas emissions (see, for example, Renou-Wilson et al, 2019). Rewetting is commonly associated with reducing the risk of both flooding and wildfire.

Most managers of grouse moors are actively engaged in peatland restoration, including rewetting. In a study of grouse moor management carried out in autumn 2024[107], gamekeeper teams from 58 moors in England were asked what methods they had used over the last three years (ie. between 2021 and 2024) to improve the habitat on their moor, and how many acres had been so improved. The responses to this question are shown in Table 7.

In common with conservation organisations like the RSPB taxpayer monies, in the form of grants and subsidies, are used by many moor owners for habitat improvement work. However, nearly all moor owners also use their own funds and, importantly the labour of their gamekeepers, to carry out much of the habitat improvement work, an interesting contrast to the RSPB at Lake Vyrnwy.

Table 7: English grouse moors habitat improvement

Method used to improve moor habitat	Total acres improved
Reseeded (including heather plugs)	10,456
Rewetted	61,409
Had peat restoration work	57,369
Had bracken management work	24,762
Cleared of self-set trees	29,119
Planted with trees	2,519
Sphagnum plug planting	464
Total area of moorland improved since 2021	186,098

The view from a RSPB hide at the northern end of the lake

Of course, rewetting is not a panacea. Holden and Burt (2003) pointed out that, unlike some lowland wetlands, blanket peat catchments tend to be sources of flooding rather than attenuators of flow. Moreover, they pointed out that it seems obvious that if peat is made wetter, this increases the likelihood of anaerobic conditions and so methane output is likely to increase. It seems that many hydrological processes occurring in peatlands remain poorly understood. Rewetting is likely to reduce some wildfire risk, but wetter areas might increase biomass and fuel production that, at drier times of the year, increase fire severity (Arkle et al, 2012) as well as increase the emission of methane, a much worse greenhouse gas than carbon dioxide. The RSPB's work at Lake Vyrnwy to rewet and restore blanket bog is impressive but, as with all land management actions, it is not without some potentially negative consequences. The same potentially negative consequences apply, of course, to any moor that has been rewetted.

The RSPB's wildfire risk-management strategy seems to depend largely on rewetting. However, the reduction in grazing animals and the relatively limited amount of cutting of vegetation mean that the fuel load on the reserve has inevitably increased. The UK Climate Change Committee's 2023 report acknowledged that the risk of wildfire will increase significantly in future decades. The report states: "The events of the last year (2022 saw the highest annual number of wildfires, greater than 30 hectares, ever recorded in the UK) reinforce the urgency of making better preparations for climate change now. Action cannot be delayed further."[108] Regional Fire & Rescue departments are firm in their view that allowing heather fuel loads to build up not only increases the risk of wildfire, but also makes their job of controlling wildfire much harder (Barber-Lomax et al, 2021). Although Hafren Dyfrdwy is reported as having a wildfire management plan, the potential severity of any wildfire at RSPB Lake Vyrnwy is higher than on moors where vegetation height and

[102] *It is not claimed that controlled burning, or cattle on the moors, caused no pollution, but local stakeholders do not know if the water companies had evidence of pollution. Many grouse moors in the north of England are part of the water catchment areas of reservoirs, but are able to manage their moorland using both controlled burning and cattle, where appropriate.*

[103] *The LIFE Programme is the EU's funding instrument for the environment and climate action, see cinea.ec.europa.eu/programmes/life_en The project that involved the RSPB covered a large area of North Wales, not just Lake Vyrnwy.*

[104] *Between the 1940s and the 1980s landowners were given taxpayers' money to dig drains on moorland to increase agricultural productivity. Ironically, they are now given taxpayers' money to fill them in. Government policy changes.*

[105] *In the 1990s, there were 22 shepherds employed in the area looking after 9–10,000 sheep on some 9,000 acres.*

[106] *Source: GWCT, Real Wilders, p.9.*

[107] *Denny, S. (2025) 'Wildlife Warden, Conservation Manager, Fire Fighter, and Educator. The Grouse Moor Gamekeeper in England in the Twenty-First Century', Regional Moorland Groups and National Gamekeepers' Organisation, in print.*

[108] *See: .theccc.org.uk/publication/progress-in-adapting-to-climate-change-2023-report-to-parliament/*

[109] *guidelinesinpractice.co.uk/infection/lyme-disease-when-to-suspect-and-how-to-manage/454252.article*

[110] *Source: Professor Roy Brown, 29 May 2020. Professor Brown is Visiting Professor in Epidemiology and Invasive Species Control at the University of Lincoln and a specialist researcher/consultant working in the environmental control of hard bodied ticks and tick-borne diseases in the Northern Hemisphere at the habitat/landscape scale through the research company, R & D Applied Biology, in North Yorkshire.*

[111] *Tick-borne diseases include arborvirus (which includes tick-borne encephalitis and the Flavivirus group, as well as Ebola and Zika are); protistans; bacteria (including Lyme disease); tick paralysis; and alpha gal syndrome.*

[112] *Louping ill seems to have been present in the UK for c. 800 years, and has been recorded for more than 200 years in sheep flocks. As sheep farming expanded to the uplands in the 19th century, grouse were exposed to louping ill gwct.org.uk/research/species/birds/red-grouse/controlling-louping-ill/#:~:text=From%20the%20blood%20samples%20we,start%20of%20the%20shooting%20season.*

[113] *The sheep at Lake Vyrnwy are dipped, contrary to some reports.*

[114] *See footnote 107.*

mass (ie. fuel load) is reduced by continual management.

Over-grazing of the uplands has been a problem in many areas (Sansom, 1999), but under-grazing also has some negative impacts (Pakeman and Fielding, 2020), (Milligan et al, 2004). One serious negative impact resulting from the reduction in the number of grazing animals is the resulting increase in the numbers of ticks. Tick numbers are rising in the UK, and the number of diseases (to both people and animals) they spread is increasing. Over 20 species of ticks are found throughout the UK but the sheep tick (*Ixodes ricinus*) is most prevalent in upland areas where the creatures they feed on (sheep, deer, rabbits, hares, birds, lizards and rodents) live. The 'headline' disease caught by humans from tick bites is Lyme disease (not every tick carries Lyme disease). The number of people who contract Lyme disease in a year is unknown, but evidence suggests it is rising. Data from Public Health England show that there were 1,534 confirmed cases of Lyme disease in England in 2017, compared with 1,134 cases in 2016[109]. There is, however, likely to be significant under-reporting owing to a combination of factors. It was estimated at an internal National Institute for Health Research (NIHR) working meeting in February 2020 that there could be as many as 18,000 new cases of Lyme disease confirmed in the UK in 2020, against about 4,000 in 2015[110]. The risks to health from tick-borne diseases are serious, and under-estimated[111]. The rates of infection in ticks and multiple pathogen loads are also increasing. New pathogen strains (eg. the *Flavivirus* causing tick-borne encephalitis (TBE) has become 'native' in the UK in the recent past. The impact of tick-borne disease, such as louping ill[112], tick-borne fever, babesiosis and tick pyaemia, on moorland wildlife and livestock can be serious. At Lake Vyrnwy, in common with other UK upland areas, sheep used to be driven around the moor to 'mop up' ticks, and then dipped to kill the parasites.[113] The regular use of sheep as 'tick mops' helped keep tick numbers down, with benefits to human and animal health. However, sheep at Lake Vyrnwy are no longer deliberately used to mop up ticks and the RSPB seems to have no deliberate tick management strategy, which is a concern given the known negative impacts of ticks on ground-nesting birds such as curlew (Newborn et al, 2009; Douglas and Pearce-Higgins, 2019).

In the study of grouse moor management carried out in the autumn of 2024,[114] gamekeepers on English moors were asked how they controlled ticks. A survey showed that a few, lucky moors did not have a tick problem, but over 90% of the moors in the sample (n = 58) devoted time and resources to trying to reduce, or at least prevent the spread of the sheep tick. Table 8 shows the responses to the question "What methods do you use to reduce tick numbers?"

The active tick management strategies used by the majority of grouse moors can be contrasted with the laissez-faire approach taken tick management at Lake Vyrnwy. Given the negatives impact of ticks on animals, including ground-nesting birds, the implications of the RSPB's approach to tick management are obvious and must make it harder to achieve its conservation objectives.

Livestock on a moor, especially cattle, are used help to control the spread of bracken. Dense bracken covers about 900,000 hectares in the UK and is increasing by between 1% and 2% per year. Bracken is present and increasing on a further 700,000 hectares. A bracken control company director[115] has pointed out that bracken "holds c. 70% of the tick load on a moor". Moreover, in the UK changes in land use policy and the climatic gradient have encouraged bracken growth over the last 30 years and, not only does the plant hold the majority of the ticks on a moor but, as noted above, tick numbers are increasing rapidly. Moor owners and managers in North Wales (and in England and Scotland) report ticks as being a "massive problem".

As well as being a host for ticks, bracken is also a disease-causing organism, although conclusions about a risk to human health from bracken cannot firmly be drawn (Wilson et al, 1998). Surprisingly, the young fronds of bracken are eaten by people in some parts of the world (for example, Japan), despite bracken being toxic and containing carcinogens linked with several diseases in animals, including oesophageal and stomach cancer, ovotoxicity, bone marrow depression, and blindness (Wilson et al, 1998). In addition to this direct toxicity to animals[116] and humans due to poisoning, and growth impacting chemical groups within the spores, frond, rhizome and true root systems, bracken also has an effect through the action of the living plant and litter on the soil and water systems in the habitat, including direct toxicity in drinking water (O'Driscoll et al, 2016) and soil at levels known to pose a risk to human health (García-Jorgensen et al, 2021). Bracken has been spreading rapidly at Lake Vyrnwy, both onto the moors and down into lower-lying fields.

The RSPB has a long-term, low-intensity strategy for managing bracken based on tree planting. Bracken is, of course, a woodland species and it is thought that planting trees within the bracken might eventually reduce the bracken coverage by shading. This strategy might work, but a survey of the academic literature suggests that tree planting as a bracken control measure has never been tested experimentally, although some scientists have suggested that bracken coverage may be reduced if, as part of an integrated strategy, there is a deliberate acceleration of infected areas to woodland (Pakeman et al, 2002), especially in neotropical, warmer areas where fast-growing trees can quickly outcompete bracken fern (Douterlungne et al, 2013). However, tree growth in North Wales is not comparable to that in the neotropics!

At Lake Vyrnwy, more active management of bracken by spraying, rolling or baling is not carried out. Although some studies have found that bracken will damage young trees (Biggin, 1982), another impact of the UK's changing climate is that there are likely to be fewer periods of cold weather. One of the key model factors affecting bracken performance is the frost-free period (Pakeman and Marrs, 1996b). Bracken is very sensitive to frost and as the latest spring frosts become earlier and first autumn frosts become later, the fronds can photosynthesise for longer. Of course, bracken can provide a habitat for some species of bird, notably the whinchat, and it also provides a landscape feature, especially in autumn after the fronds turn brown (Pakeman and Marrs, 1992). However, a general review of the pros and cons of the bracken habitat showed that where it colonises, the conservation value is generally reduced relative to the communities that it replaces (Pakeman and Marrs, 1992). The RSPB's plans for bracken management at Lake Vyrnwy may be effective eventually, but are speculative as they are based on incomplete science and it will be many years before any reduction in bracken coverage may be seen. In the meantime, the problem is likely to increase as the bracken continues to spread.

The RSPB's approach to managing bracken at Lake Vyrnwy, which used

[115] *Interviewed on 20 May 2020 by S Denny*

[116] *In 1988, bracken was shown to cost £8.8m to the agricultural economy in the Least Favoured Areas of England and Wales through reducing the amount of available grazing and increasing the costs of stock gathering and veterinary bills (Varvarigos and Lawton, 1991).*

Table 8: Methods used to reduce tick numbers on 58 English grouse moors

Method used to reduce tick numbers	Moors using method
Grazing and dipping sheep	29
Bracken management	23
Deer culling	3

[117] *Companies such as Dalefoot sell compost based on bracken, see dalefootcomposts.co.uk/our-products.aspx*

[118] *See futurelandscapesforum.com/bracken-control*

[119] *Between 2005 and 2014 an average of 43 hectares was cut each year, out of some 6,200 hectares of upland habitat and farmland.*

to be a grouse moor, presents an interesting contrast with the bracken management methods used on grouse moors in England. The study of 58 English moors carried out in the autumn of 2024, referred to above, found that only two of the moors did not have a bracken problem. Of the 56 moors that managed bracken, all used more than one method with the majority (70%) spraying herbicide, about a third crushing the bracken using heavy rollers pulled by tractors and another third using cattle to tread down the fronds when they were young, a similar technique to rolling, but using beasts. Mowing was used by 25% of the moors, and three moors employed contractors who collected the cut bracken and then used it for compost, etc.[117] Finally, three moors tried to control the spread of bracken in selected areas by planting trees which, it was hoped, would out-compete the fern – a method that has not been tested experimentally, as noted above.[118] The important point to note about bracken control is that 97% of moors covered by the study devoted time and resources to limit the negative impacts of bracken to improve biodiversity and animal health. Bracken control is an important task for the great majority of keeper teams, but not it seems for the RSPB at Lake Vyrnwy.

Overall, it can be concluded that the reduction in grazing on the uplands of Lake Vyrnwy, together with absence of both tick control and short-term, active, management of bracken will impact both vegetation and animal life, which is likely to have negative impacts on biodiversity (Maren et al, 2008), especially threatening ground-nesting birds by increasing parasite burden and disease, and by reducing habitat. These negative impacts are compounded by the increased risk of severe wildfire in areas of the reserve where vegetation is not effectively managed to reduce fuel load.

The State of Lake Vyrnwy in 2021

Hafren Dyfrdwy, United Utilities and the RSPB have, between them, greatly changed the management regime of Lake Vyrnwy since the 1990s; controlled burning has ceased, grazing has been significantly reduced, and mowing only takes place on a tiny percentage of the upland area.[119] The impacts of these changes have been claimed to be positive in many ways. However, in a bid to the Heritage Lottery Fund for c. £3 million, submitted in

2021 by the local stakeholders' forum (of which the RSPB is a part) the condition of the Lake Vyrnwy moorlands was described using dramatic language:

"Without the serious interventions that RSPB is proposing in this bid, in the next few years curlew, black grouse and merlin will cease to appear as breeding species in this area of Wales. It is likely that the same fate would befall red grouse and hen harrier within the next decade."

The bid continued by saying that: "The last formal condition assessment in 2005 identified Vyrnwy blanket bog and dry heath as being in unfavourable condition. Blanket bog has degraded following historic inappropriate management which saw habitat drained for maximum upland stock rates, peat cutting for fuel and afforested with non-native conifers. An EU LIFE project (2006-2011) started to reverse some of these practices, but large areas remain at risk. There is an urgent risk of bogs drying out, accelerating erosion, releasing carbon into the atmosphere and threatening the fragile ecosystem.

[120] *Comparisons are not always helpful, but the author knows of a farm in Bedfordshire where, on a disused airfield, at least two pairs of curlews have bred for many years (source: farm owner), and at an RAF station in Suffolk at least three pairs of curlew bred in 2024 (source: RAF environment services). The RAF station also had stone curlew breed successfully in 2024. In some ways it is strange that an RAF station, where no specific management for curlews takes place, has more breeding curlews than a 10,000-hectare reserve run by the RSPB which has a management plan to conserve the species.*

[121] *The lack of public access to the Lake Vyrnwy reserve presents an interesting contrast to many grouse moors in England where thousands (in some cases hundreds of thousands) of people can walk or cycle across the moors on public footpaths. Although access to these moors does not depend on gamekeepers, the work they do maintaining paths and tracks mean that millions of people a year are able to enjoy leisure activities on grouse moors. These activities result in very large, if incalculable, health and well-being benefits.*

"Vyrnwy's native woodlands are at great risk from invasive non-native species (INNS), such as rhododendrons, laurel, and multiple conifer INNS pose a similar threat in the designated moorland (dry heath and blanket bog) where self-seeded conifers and rhododendrons have matured and threaten to outcompete native species.

"Lake Vyrnwy has the largest block of the area's heather moorland left under single ownership: without urgent intervention more of this limited habitat will be lost.

"Priority species are at further risk from predation, scrub encroachment and lack of landscape scale management that meets their needs. This is particularly the case for the UK BAP curlew and the most southerly UK population of black grouse. Breeding pairs of peregrine falcons have dwindled to just one as breeding site conditions have deteriorated."

Given that the RSPB had a vision and management plans for the reserve, and that it, together with Hafren Dyfrdwy was charged with maintaining an area the great majority of which is a designated SSSI, SAC and SPA, the choice of words is rather strange, to say the least. The wording used in this Lottery Bid, if they were an accurate account of the state of the moorland, appear to be admitting a management failure at Lake Vyrnwy area. Given the wording used in the bid to the Heritage Lottery Fund (which was unsuccessful, although a revised bid did receive c. £500,000), it is perhaps not surprising that curlew and black grouse numbers, shown in Table 6 above, have failed to achieve the targets the RSPB set itself. [120]

In June 2024, the author had an escorted tour of the reserve area from with a person who has lived in the Lake Vyrnwy since the 1970s, and has worked in the reserve area since 1987. The tour did not, indeed could not, cover the whole of the RSPB managed area, but did enable him to see large areas of the upland and low-lying farmland. There is no public access onto most of the reserve (hence the escorted tour) and there are large and locked metal barriers across all tracks leading to the uplands and farmland. Only forestry workers, farmers and gamekeepers are to access the woodlands by vehicle.[121] The author observed that many of the tracks, especially those in the coniferous woodland, were in very poor condition with evidence of significant water damage to the surface (the spring of 2024 was, of course, extremely wet). The sides of the track were overgrown by vegetation, as were the ditches at either side of the tracks. According to his escort, the tracks used to be well maintained until around 20 years ago. On the moorlands the author's view was that although small areas of vegetation had been mown, much of the vegetation on the moor was too tall to support grouse or curlew, and was tall enough to provide a worrying amount of fuel to any wildfire that breaks out. It was clear that bracken was spreading rapidly, both on the moorland and into lower-lying fields (including those next to streams

"I'm gutted and disappointed, but I can't do anything about the mismanagement of the area…"

The author's escort

feeding the lake). Several fields contained large numbers of docks and thistles.[122] In places, stone walls had fallen down, as had some gates. Buildings that had been lived in, or were used by shepherds only 30 years ago, were now nearly derelict. The author's escort remarked:

"*I'm gutted and disappointed, but I can't do anything about the mismanagement of the area… It's an avian desert now, there's nothing here.*[123] *When the ex-land agent for the estate visited a year ago (in 2023) he just burst into tears at the state of the place.*"

But is there an Alternative?

Before criticising the RSPB and Hafren Dyfrdwy for the management of Lake Vyrnwy, it is necessary to ask whether the bird life at the reserve (an SSSI, SPA and NNR) is any different from the situation from elsewhere in Wales and the UK.

There have been serious concerns voiced about declining biodiversity in designated areas in the UK.
On 18 March 2024, the Office for Environmental Protection (OEP), a public body legally created under the Environment Act 2021[124] which helps to protect and improve the environment by holding government and other public authorities to account, announced that it was investigating the Department for Environment, Food and Rural Affairs (Defra) Secretary of State, and Natural England over possible failures to comply with environmental law in relation to SPAs for wild birds.[125] The consensus among conservation organisations is that wild bird populations continue

[122] *The RSPB farm is organic, so no spraying of pernicious weeds is allowed. However, other organic farms in Wales where the author has visited seem not to have the same numbers of weeds. They did, of course, have more animals grazing the fields. The RSPB has said it farms for nature, not agriculture.*

[123] *Over a six-hour period the author (an experienced birdwatcher) and his escort saw, on the lower-lying part of the reserve area, one blackbird, one yellow wagtail, one robin, one barn owl (in a ruined building). In the upland area they saw one peregrine, four crows, two buzzards, two red kites and around eight or nine meadow pipits. Despite their best efforts, they could not find any red or black grouse and the only curlew nesting site they saw was on a tenanted farm (next door to the RSPB's farm).*

[124] *See theoep.org.uk/about-what-we-do The OEP is an executive non-departmental public body, sponsored by Defra.*

[125] *See OEP Launches Investigations into Special Protection Areas for Wild Birds | Office for Environmental Protection (theoep.org.uk).*

to decline across England, with 70 species now on the Birds of Conservation Concern Red List,[126] a number that has almost doubled in 25 years, although some scientists have questioned this consensus.[127] The OEP also announced that it would be investigating the Department for Agriculture, Environment and Rural Affairs (DAERA) in Northern Ireland over possible failures to comply with Northern Ireland environmental law in relation to SPAs. As part of a co-ordinated plan, on the same day the Environmental Standards Scotland (ESS) launched an investigation today into similar issues in Scotland, and the Interim Environmental Protection Assessor for Wales (IEPAW) said it would be undertaking work that includes SPAs due to its concerns about them.

The Chief Executive Officer of the OEP issued a press release which said: "It is significant that today (18 March 2024) marks the beginning of three investigations in three different countries, on the same important environmental issue. The ESS' investigation, our own investigations in England and Northern Ireland, along with the concerns of IEPAW, demonstrates this is a UK-wide issue that requires attention. SPAs play a key role nationally and internationally in protecting populations of wild birds that are currently in regrettable decline. They are important for achieving government's commitments in relation to nature, such as the goal of thriving plants and wildlife in the Environmental Improvement Plan (EIP) and the legally binding targets to first halt and then reverse the decline of species abundance. This is in addition to the UK Government's international commitment to protect at least 30% of land and ocean for nature's recovery by 2030.

"*Our investigation will seek to establish whether the recommendations of previous SPA reviews, such as one that was published in 2001, have been fully implemented and if not, the reasons why. The background to our investigation is that recommendations from another review carried out between 2015 and 2017 have yet to be published. Another step in that review, which may include classifications of new SPAs and the adaptation of existing SPAs, has yet to begin.*"

If an investigation found a failure to comply with environmental law, the OEP said it would aim to resolve any non-compliance through co-operation, dialogue and agreement with public departments and authorities. However, it continued, where a satisfactory outcome cannot be reached through these means, the OEP can use its other enforcement powers including, if necessary, commencing court proceedings. Following the OEP's announcement, on 11 July 2024 the UK Parliament issued an update on the slow progress that has been made addressing biodiversity loss in the UK.[128] The update pointed out that:

"*Healthy, diverse ecosystems are essential for the processes that support all life on Earth, including humans. However, as noted by the UN, this biodiversity is 'declining globally at rates unprecedented in human history' and the rate of species extinctions is accelerating with one million species under threat,*" and depressingly noted that: "*Natural England, the government's natural environment adviser, has said that the UK is one of the most nature-depleted countries in the world, with nearly one in six species threatened with extinction. Natural History Museum scientists have concluded that only around half of the UK's natural biodiversity remains intact.*"[129]

The update from Parliament highlighted that the UK had only met five of the AICHI biodiversity targets,[130] including expanding the network of protected nature sites and publishing a national biodiversity strategy. Interestingly, the update also cited the RSPB saying that the charity had: "concluded in 2020 that governments across the UK fell most short of the targets, which actually make a difference for species or habitats", calling the 2010s a "lost decade" for nature.

When the OEP investigation and the UK parliament biodiversity update are considered together, one conclusion could be that expanding nature reserves and having a national biodiversity strategy have not worked. This is a concerning conclusion that was reinforced by Mr Iolo Williams (co-author of the 1995 RSPB report, Silent Fields, it will be remembered) who claimed in April 2024 that nature was in crisis across Wales' National Parks. He cited a 'health check' carried out across England and Wales by the Campaign for National Parks which had found that only 23% of SSSIs in National Parks in Wales were in a favourable state for nature.[131] Mr Williams' claims were supported in January 2025 by a report produced by the Senedd's cross-party climate change, environment and infrastructure committee. This report claimed that Wales was failing to tackle an alarming decline in nature and that the Welsh Government lacked action and investment. The report noted that as long ago as June 2021, the Welsh Government had promised to set legally binding biodiversity targets, but it had admitted to the committee that these targets were now unlikely to be set until 2029, and the natural resources policy and Nature Recovery Action Plan for Wales were years out of date.[132]

However, there are several instances of private landowners in Wales and the rest of the UK managing their land in ways that have enabled them to maintain, and in many cases, increase biodiversity. The author reviewed relevant literature and visited some of these landowners to learn how they managed their land and the impacts on biodiversity that resulted. The following section of the report examines their work.

[126] *Meaning that they have suffered severe declines and or are threatened with extinction.*

[127] *In an article entitled 'Are Defra Ministers being misled by campaigning NGOs over farmland bird numbers?' found on the Science for Sustainable Agriculture website, the authors argue that "a recent Government report charting further declines in farmland bird numbers has raised serious questions about the scientific basis on which these statistics are collected and interpreted. Based on a highly selective (and unchanged) list of 19 'farmland birds' used to determine changes in populations over the past 50+ years, the Defra report suggests that numbers are still in rapid decline and have declined by a further 9% over the past five years. Although no supporting evidence is provided, farming practice is cited as the main reason for the continuing declines. However, an alternative, much more comprehensive inventory of 64 British 'songbirds', which includes many species commonly found on farmland but not included on the Defra list, indicates that although there are fluctuations between species, the total number of birds in the UK has remained remarkably stable over the past 27 years, in fact numbers have increased slightly by 1.5%. The total bird 'biomass' has also remained unchanged over that period." See scienceforsustainableagriculture.com/buttonpearsallridley*

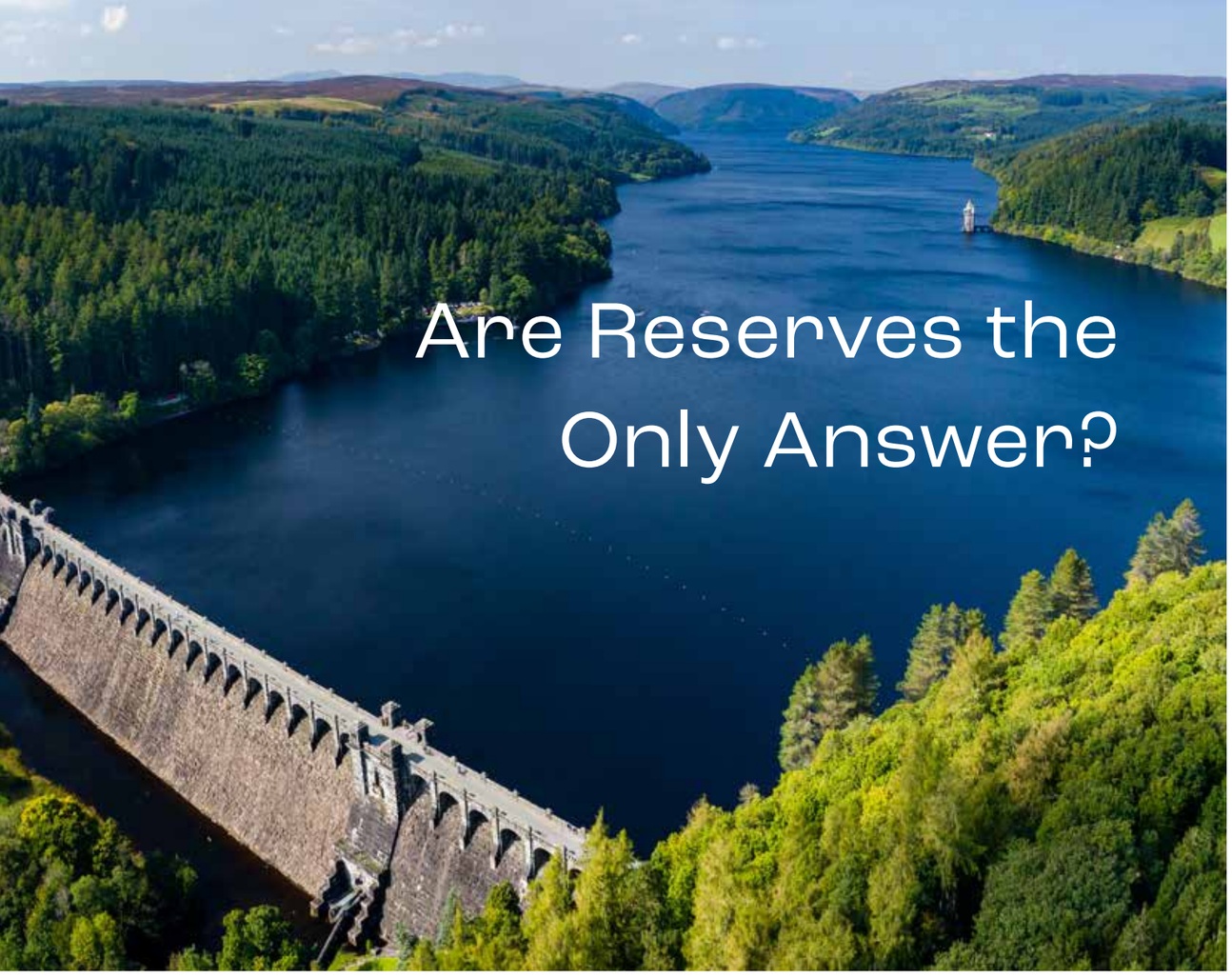
[128] *See Biodiversity loss: The UK's international obligations (parliament.uk).*

[129] *However, it must be noted that there is no formal definition of what 'nature depleted' means. According to the Biodiversity Intactness Index (BII) developed by the Natural History Museum, Britian is nature depleted as the BII compares current biodiversity with a baseline of species from near-undisturbed sites. But, if the Environment Performance Index (EPI) epi.yale.edu/ developed by Yale University is used, the UK ranks 43rd out of 152 countries for habitat intactness and 23rd out of 180 for biodiversity. There is no argument that numbers of some animals and plants have declined in the UK, but the announcement by the UK Parliament could be seen as unnecessarily alarmist.*

[130] *See cbd.int/sp/targets*

[131] *See nation.cymru/news/nature-in-crisis-across-wales-national-parks-according-to-iolo-williams/*

[132] *See theguardian.com/uk-news/2025/jan/20/wales-failing-to-tackle-alarming-decline-in-nature-report-finds#:~:text=The%20Welsh%20government%20is%20failing,change%2C%20environment%20and%20infrastructure%20committee. And bbc.co.uk/news/articles/c627741183ro*



Are Reserves the Only Answer?

[133] *See gwct.org.uk/media/1477669/Managing-for-More-THINK-PIECE-v11-LR.pdf*

[134] *See farminguk.com/news/public-have-no-idea-about-farmers-environmental-work-survey-says*

[135] *See nfuonline.com/updates-and-information/farmer-favourability-survey-results/*

The UK has a 'man-made' landscape that must meet multiple demands: for food, recreation, biodiversity, water quality, clean energy among others. Meeting these demands is not possible without management. Decades of research carried out by the GWCT has concluded that many of the UK's most successful species recovery projects have been driven by private estates and farms combining effective predation management with habitat improvement,[133] although sadly most people have no idea that farmers carry out work to improve the environment,[134] (while seeming to value the farming profession[135]).

"Conservation will ultimately boil down to rewarding the private landowner who conserves the public interest."
Aldo Leopold

The work done on the Peppering Estate in the Sussex South Downs is an interesting and encouraging account of how commercial agriculture, habitat improvement and predation management can deliver positive outcomes for red-listed birds (Morgan-Grenville and Norfolk, 2024). Therefore, it is necessary to examine the biodiversity outcomes that private landowners can achieve. Inevitably the case studies that follow represent no more than isolated examples, but they illustrate that making a living from agriculture and land management is entirely compatible with environmental improvements and thriving populations of wild birds, many of which are red listed.

Landis (2017) points out that intensive agriculture produces high yields in the short and medium term, but results in a loss of biodiversity and the ecosystem services on which, in the long term, agriculture depends. It is increasingly obvious that as management intensity decreases, the nature value of farmland increases (Lomba et al, 2022) and vice versa. In addition to the intensity of farmland management, scale is important. Larger, landscape-scale areas with good quality and varied habitats will support greater population sizes and higher numbers of species than smaller, uniform, areas (Gabriel et al, 2010). Landowners and farmers will inevitably have different levels of motivation to manage land in a way that produces a return and supports biodiversity.[136] However, in theory at least in the UK, estates and farms are increasingly moving towards nature-friendly farming encouraged by changes in farm payment schemes such as the Environmental Land Management Scheme (ELMS).[137]

One of the aims of this project is to examine and review the outcomes achieved relating to the conservation of wild birds and their habitats by private landowners managing estates and farms. This is an important issue as 90% of the total land area of Wales is used for agriculture, with 79% of this land classified as Less Favoured Area.[138] The current policy approach of increasing the extent of protected areas (nature reserves) is not maintaining, let alone increasing, biodiversity and there are worrying reductions in the numbers of red-listed birds. It cannot be said that nature reserves always work.

Importantly, commercial landowners, particularly the larger ones, operate profitable businesses that employ large numbers of people. They often have a wide-ranging portfolio of income-generating activities such as tourism and hospitality, property rental, energy generation, retail outlets and sporting activities. Their agricultural and other commercial activities mean they must comply with a very complex mesh of legislation and regulation, which is further compounded if they have areas of special status on their land, such as SACs, SPAs, or SSSIs.

The 2024 study of grouse moors in England cited above, which are nearly all commercial concerns, found that 28 bird species commonly occurred, 10 of which were much more common than others, see Figure 1:

[136] *Upadhaya et al, 2021 suggest a potentially useful typology indicating how likely farmers will be to support biodiversity with their four categories being: Conservationist, Deliberative, Productivist, and Traditionalist.*

[137] *See gov.uk/government/publications/environmental-land-management-update-how-government-will-pay-for-land-based-environment-and-climate-goods-and-services/environmental-land-management-elm-update-how-government-will-pay-for-land-based-environment-and-climate-goods-and-services*

[138] *Source: research.senedd.wales/media/iuch3jz1/22-47-farming-sector-in-wales.pdf*

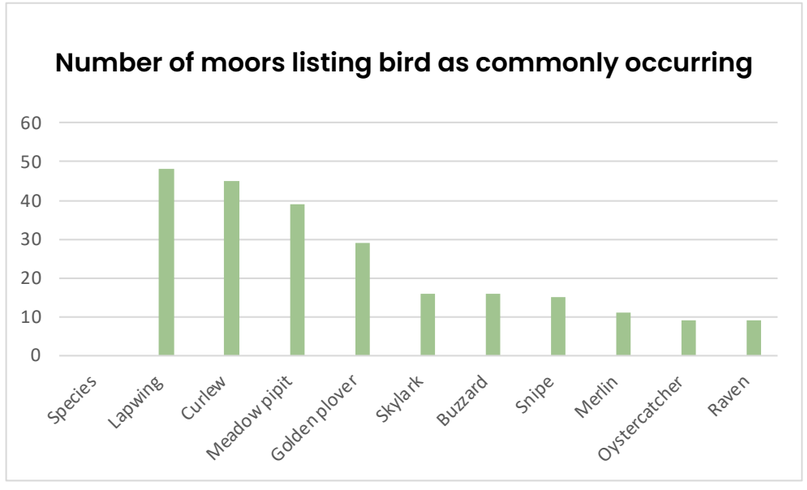


Figure 1: Ten most commonly occurring bird species on 58 English Grouse Moors

[139] *The 11 red listed species are: grey partridge, lapwing, curlew, woodcock, hen harrier, merlin, skylark, mistle thrush, black grouse, ring ouzel and linnet.*

[140] *See bto.org/our-science/publications/birds-conservation-concern*

Other species listed as commonly occurring on these moors included pheasant (seven mentions), kestrel and black grouse (five mentions each), grey partridge, hen harrier, ring ouzel, wheatear, and woodcock (four mentions), redshank and stonechat (three mentions), barn owl and red kite (each mentioned twice), and tawny owl, blackbird, mistle thrush, linnet, and peregrine (mentioned once). It should be noted that, of the 28 commonly occurring bird species, 11[139] are red listed as Birds of Conservation Concern by the British Trust for Ornithology (BTO)[140]. It should be noted that the moors surveyed did not just count their own birds, which would lay them open to charges of bias. Over 40% of the sample of 58 moors had between 2023 and 2024 paid for surveys to be carried out by external organisations such as the BTO, and 55% of the moors had bought new wildlife-monitoring equipment in the same period.

Moreover, the breeding success of bird species on these English grouse moors is remarkable, especially when compared with that achieved at Lake Vyrnwy. In the 2024 study respondents were asked: "Over the last three years, how many of the following species of bird have successfully fledged young on your moor?" Their responses are shown in Table 9.

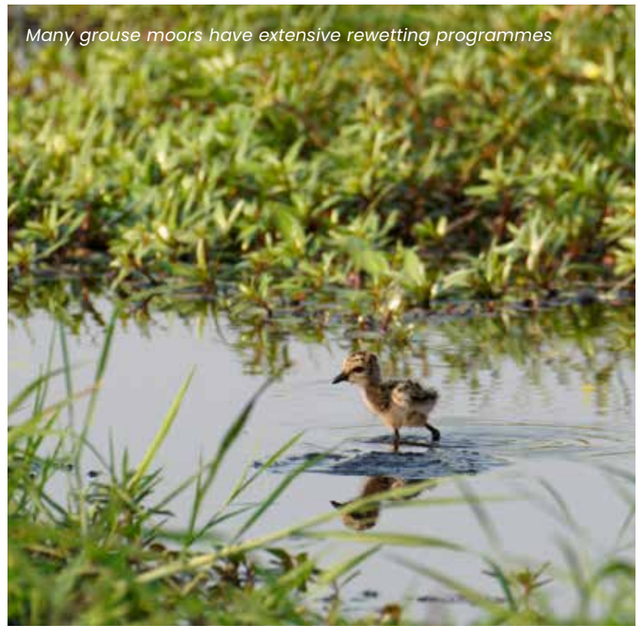
Bird species	Pairs successfully fledging young
Curlew	12,953
Lapwing	17,021
Oystercatcher	6,885
Redshank	1,441
Golden plover	6,656
Ringed plover	450
Snipe	1,025
Black grouse	1,022
Hen harrier	49
Merlin	514
Kestrel	940
Buzzard	1,078
Peregrine	66
Barn owl	166
Whinchat	1,114
Skylark	3,571

Table 9: Species successfully fledging young on 58 English grouse moors

Oystercatchers frequently breed on grouse moors

According to the BTO, there are c. 59,000 pairs of the red-listed curlew in the UK.[141] The 58 moors in the 2024 study's sample had on less than 450,000 acres over the last three years, fledged young equivalent to c. 12% of this population. Nearly 9% of the UK's lapwing population, and over 10% of the UK's golden plovers had fledged on these moors. It is beyond debate that the grouse moors of England are vital for many species of bird, especially increasingly rare waders. Peer-reviewed research carried out by the GWCT in 2023 identified that there were twice as many waders found on grouse moors compared with non-grouse moors. Redshank and golden plover were found on half of the 18 grouse moors studied, but only on 20% of non-grouse moors. Curlew occurred four times more frequently on grouse moors than on non-grouse moors.[142] It is also worth noting that all the 58 moors contained populations of at least two species of successfully breeding raptors, with moors in the North Pennines, Forest of Bowland and Peak District having successfully fledged hen harriers. It seems that if you want to see increasingly rare birds, one of the best places to go is an English grouse moor. Moreover, as commercial operations these moors do not depend on grants from governments. In terms of value for money, the 2024 study of grouse moors suggests that some commercial landowners are good at managing areas of moorland that have a rich bird life.

It is a truism to say that all estates and farms are different (as are all nature reserves), with enormous variation in size, soils, topography, altitude, weather, land use, diversification, etc. However, it is possible to group, albeit crudely, commercial land management into three broad categories by ownership and size: estates, farmer clusters and individual farms. The key term in this grouping is 'commercial'. This report is not looking at estates which have been been 'rewilded', even if they have some form of commercial aim, such as the Knepp estate's organic meat business.[143] Literature relevant to the conservation of wild birds and their habitats was reviewed and interviews held with owners or managers of two estates (one in Wales, one in the north of England), members of a farmer cluster (in Wales), and one individual farmer (in Wales). Based on the interviews and information in the public domain, five case studies were produced.



Many grouse moors have extensive rewetting programmes

Estates

When interviewing the owners and managers of privately-owned commercial estates, the term 'custodian' is very frequently mentioned. As Tom Bolton has said: [144]

"By definition, for someone with a sense of custodianship, the priority and measure of success is protecting existing birds, whereas I think some conservationists associate success with reintroduction of more visually impressive species. I am not suggesting the latter is not important, but must, I believe, be done alongside protecting existing species of conservation concern."

[141] *See bto.org/understanding-birds/birdfacts/curlew*

[142] *See gwct.org.uk/wildlife/research/birds/waders/do-we-need-fox-and-crow-control-to-halt-curlew-declines-in-the-uk/ In addition to managing habitat, gamekeepers control the numbers of generalist predators, thus significantly increasing the likelihood of ground-nesting birds hatching eggs and fledging young.*

[143] *See knepp.co.uk/wild-range-meat/shop-wild-range-meat/*

[144] *Quoted in GWCT Gamewise, Summer 2024, p.9.*

Barn owls benefit from nesting boxes at Rhug

Case Study 1: Rhug Estate, Denbighshire, North Wales

The Rhug Estate covers 12,5000 acres (5,058 hectares) in North Wales. There is a 6,700 acre in-hand farm near Corwen and another 1,500 acre in-hand farm near Caernarfon. There are also about 170 tenancies including let farms, in-hand and let forestry, let cottages, commercial premises, and storage. The estate offers traditional country sports such as shooting and fishing as well as more modern activities such as rally car driving, gorge walking, mountain biking, and canoeing. Over 120 people are employed by the estate,[145] with most of them living the local area, and a wide range of internal and external contractors provide services. Rhug is one of the three biggest employers in the area and is an important local business as well as forming a significant community in its own right.

The in-hand farms are organic (certified by the Soil Association) with a wholesale business providing lamb, beef, chicken, pork and game to a number of high-class hotels in the UK and abroad, but also to schools, including in Tower Hamlets in London. Around 20% of Rhug's farm produce is exported to countries including Hong Kong, Dubai, Singapore and the Maldives. There is also a very successful farm shop and café on the A5 road near Corwen. Profits are put back into the estate and the local community.

In 2016, the estate won a Footprint Award for the sustainable use of natural resources due to its renewable heat and power generation. Sustainability and environmental protection underpin Rhug and its aim is to achieve net-zero emissions across the estate. A bank of charging points for electric cars is available at the farm shop, and one of the estate's delivery vehicles has been equipped with a hydrogen electrolyser, thus greatly reducing carbon emissions (by 80%) and fuel combustion.

Preserving and increasing biodiversity is very important and active measures are taken. Heather is managed carefully and bracken controlled. Legal predator control is carried out, including on mink and grey squirrels. Regular bird counts show that the estate's moors have good breeding populations of both red and black grouse, hen harriers, and merlin as well as large numbers of songbirds. Cattle are used on the moor to help with bracken control, to reduce the risk of wildfire, and to improve habit for ground-nesting birds (as recommended by the Farm Advisory Service, Scotland, 2017). It is worth noting that Rhug Estate Office is less than 20 miles north of the RSPB office at Lake Vyrnwy, and at the northern margin of the Berwyn.

The estate devotes significant effort to reducing the risk of wildfire. The wildfire that broke out around the Horseshoe Pass on 19 July, and continued until 25 September 2018, destroying the vegetation over 715 acres is fresh in managers' minds.[146] Tracks on the estate are well maintained to allow access to people fighting fires and the management of vegetation is a priority.

Rhug took part in a Sustainable Management Scheme (SMS) with two other landowners. The SMS aimed to gather data and invest in GPS collars for cattle as part of a grouse moor management project. Although the bureaucracy involved was "a nightmare", the project was part of the picture which showed that Rhug was delivering all the Welsh Government's strategic objectives for agriculture. However, Rhug is concerned that the new subsidy regime in Wales does not support large landholdings effectively. All farms get the same payment for their first 200 hectares, and then progressively smaller payments so that only 37 pence a hectare is paid for holdings of 400 hectares and above. Yet as Rhys Davies, the Estate Manager, says "areas don't look after themselves, you need to manage them".

[145] *The number of people employed by Rhug is c. 10 times larger than those employed at RSPB Lake Vyrnwy.*

[146] *See shropshirestar.com/news/local-hubs/mid-wales/llangollen/2018/08/10/extent-of-blaze-revealed/*

Case Study 2: Raby Estate, Upper Teesdale, County Durham

The Raby Estate in Upper Teesdale covers a significant area of mixed farmland and moorland in the North Pennines National Landscape. The moors are listed as an SAC and an SPA, affording them the highest level of protection. As well as agriculture, Raby manages residential and commercial property, leisure and tourism and country sports (shooting and fishing).[147] The upper Teesdale estate has over 50 tenanted farms and 185 tenanted properties with more than 2,000 people living in them.

Across Raby's wider landholdings, about 30 retired employees of the estate are provided with accommodation. With over 200 employees, there is a strong Raby community. Over 40 local contractors, both indoor (eg. decorators, plumbers) and outdoor (eg. fencing) have businesses largely serving the estate.

Raby is unusually outwards looking, working closely with local public sector partners including Durham County Council, the Newcastle-Gateshead Initiative,[148] and Visit County Durham[149] to develop the visitor economy in the region. The estate owns three hotels, pubs and holiday lets, as well as high-profile visitor attractions such as Raby and High Force Waterfall. Leisure and tourism account for up to 35% of the estate's turnover.

Additionally, there is regular engagement with the Durham Wildlife Trust, the Tees River Trust and local parish councils, and Raby often facilitates research projects for Newcastle and Durham universities. National partners Raby works with include Natural England, Defra, the Environment Agency, the North Pennines National Landscape,[150] the RSPB and the GWCT.

Raby is managed commercially and, importantly, profits are ploughed back into the estate and local economy. In-hand farming operations must be profitable, must provide top quality food products, but must also improve the environment. There are some mid-tier stewardship schemes on less profitable areas of farmland that are designed to provide new, or enhance existing, habitats. On the moorland, which is used for grouse shooting among other activities[151], conservation measures include rewetting, tree planting around the fringes of the moor, heather cutting, controlled burning, extensive grazing, legal control of generalist predators (foxes, crows, stoats) and wildlife monitoring. The high levels of land stewardship undertaken by estate staff and tenants mean that Raby's moorland is known as being nationally important for its abundance of rare flora and fauna.

The results of Raby's management regime for birds are hugely impressive. The estate has the highest density of waders (curlew, lapwing, snipe, redshank) in mainland Britain (only the Orkneys has a higher density), about a third of the black grouse in England, a breeding population of merlin of regional importance and large number of passerines and, feeding on them, raptors including hen harriers; an extraordinary abundance of red-listed species.

Crucial to the commercial and conservation success of Raby is the sense of custodianship that its owner, Lord Barnard, has. The estate's planning and management, with its decades-long timescales, are typical of how Britain's landed estates have evolved since 1945. As Mr Duncan Peake, Chief Executive Officer, said: "Taking the long view is in our DNA because anything in rural property is longer-term than in other sectors. When you're planting trees, you're looking at a crop rotation of 60 to 120 years. Those are the timelines we work to. For my principal, Lord Barnard, his legacy for the next generation and beyond is important. Not just for his family, but for local communities and families."[152] Allied to this continuity of ownership, Mr Peake believes that Raby's fast decision-making process gives it an advantage, the estate will deliver what it says it will deliver.

The Raby Estate in Co Durham shows that, with effective long-term and targeted management, commercial farming, property management and large-scale tourism can take place along with the preservation of increasingly rare native bird species. It offers a fascinating case study.

However, even at Raby there is a strongly held view that the UK's Government does not understand how the countryside works. In interviews, managers at Raby pointed out that the level of detail now required for ELMS is so great that organisations with professional bid writers have a great advantage over farmers. These managers believe that the UK is at a worrying point in the transition of agriculture, as increasingly NGOs are positioning themselves as the one-stop-shop for the provision of environmental benefits and biodiversity. There is a very real risk that the work that estates and individual farmers do to deliver environmental benefits will be unrecognised and misunderstood. Mr Peake has commented that people in the countryside feel like things are done to – rather than with – them. "Everyone has an opinion about what we do. We need to be sensible about that: particularly in farming; grants and subsidies mean the taxpayer is a stakeholder. However, if there was more engagement between rural communities and the rest of the UK, many more good things could be achieved for nature and the environment."[153]

[147] *Raby also has an estate in Shropshire, which does not form part of this case study.*

[148] *See ngi.org.uk/*

[149] *See visitcounty durham.org/*

[150] *See national-landscapes.org.uk/*

[151] *There was a pheasant shoot on the Shropshire estate which stopped operating because it was not resulting in a biodiversity gain.*

[152] *Source for quote: ww3.rics.org/uk/en/modus/natural-environment/land/president-column-ann-gray-november-2023.html*

[153] *Source for quotes: ww3.rics.org/uk/en/modus/natural-environment/land/president-column-ann-gray-november-2023.html*

Farmer Clusters

"Nature Reserves have got bigger and more numerous, but there continues to be a significant decline in bird numbers. Therefore, the question has to be asked whether Nature Reserves work? It is known what to do to deliver conservation success, and you have to involve farmers and work with them, not just tell them what to do. If farmers were involved in conservation plans you would get landscape scale initiatives rather than trying to reverse declines on 'islands' for wildlife." Nick Myhill, Curlew Conservationist, Wales.

The concept of farmer clusters[154] was developed by the GWCT in 2013 and was designed to help farms join together over a larger area, enabling them to work collaboratively to find solutions, share ideas, and deliver greater benefits for wildlife and nature that can be implemented on a landscape-wide scale. The model has been widely adopted, and in June 2024, there are 122 farmer clusters in England, three in Wales, and one in Scotland.[155] Clusters are funded by a combination of grants of taxpayers' money (eg. Stewardship Schemes), independent funds (including money from participating farmers), and natural capital marketplaces. Over 5,000 farmers are involved in these clusters and many of them are achieving impressive results. Through their size and ability to operate on a landscape scale, Farmer Clusters can be significantly more heterogeneous than individual farms, and they have been shown to be important for biodiversity, most recently by Priyadarshana et al (2024). They are the antithesis of the small nature reserve, for as Hallam Mills of Bisterne Estate and the Environmental Farmers Group,[156] has said: "Pockets of greatness are absolutely useless to Nature."[157]

[154] *This case study is derived from the information contained at farmerclusters.com/*

[155] *See farmerclusters.com/profiles/*

[156] *See environmentalfarmersgroup.co.uk/*

[157] *Source: Country Life, 26 June 2024, p.72.*

[158] *This case study is taken from farmerclusters.com/case-studies/martin-down-supercluster/*

Case Study 3: Martin Down Farmer Cluster[158]

The Martin Down Farmer Cluster is one of three farmer clusters surrounding Martin Down National Nature Reserve in the Cranborne Chase area of Dorset and Hampshire. It consists of 12 conventional arable and mixed farms on well-drained chalk geology which cover a contiguous area of about 5,500 hectares around the Martin Down National Nature Reserve. All farmer members are steering members and meet regularly to discuss and agree actions which are then implemented with advice from experts.

The cluster is independently funded by a mixture of sources:

- Farmers contribute £1/ha annually
- Private charitable trust funding
- GWCT
- Natural England project grants.

The cluster began in 2017 by carrying out a baseline survey of wildlife on all 12 farms. Following this survey three aims and priority species and habitats were identified. The cluster aims to protect and enhance the iconic and threatened wildlife of Martin Down; protect, encourage and monitor the characteristic wildlife species of arable and mixed farmland; and to establish habitat links across and within the three clusters, to reconnect existing wildlife-rich features such as chalk downland. Its priority species and habitats include:

Species

- Birds: turtle dove, lapwing, barn owl, grey partridge, corn bunting,
- Mammals: hedgehogs, harvest mice,
- Insects: bumblebees, small blue/ Duke of Burgundy/dark-green fritillary butterflies,
- Flora: arable flora.

Habitats

- Soil organic matter,
- Chalk stream water quality.

By working together, since January 2017 the cluster has:

- Created over 85 hectares of brand-new grass and flower margins, wild bird seed plots, cultivated margins for arable flora, arable reversions and pollen and nectar mixes;
- Increased the amount of wild pollinator habitat on arable land by 50%;
- Doubled the number of drinking ponds and puddles for turtle dove;
- Improved education in four villages about hedgehogs;
- Created grey partridge habitat on 600 hectares of the cluster area;
- Nine out of 11 farmers are now running Larsen traps to reduce magpie predation pressure on turtle doves;
- Won a 2020 Defra 'Bees Needs' award in the Farming Category.

In addition to a 28% increase in butterfly species richness across the cluster since 2017 (as measured by Wider Countryside Butterfly Transects), the cluster has seen a 120% increase in grey partridges (see Figure 2) a 31% increase in barn owl brood attempts, and corn bunting territories have increased by 125%. Additionally, by 2020 harvest mice had colonised all surveyed new beetle bank and wildflower margin habitats since their creation in 2018; and according to the Plantlife Important Areas for Arable Plants scoring (IAPA) the Martin Down Farmer Cluster is now of National Importance for its flora assemblage. The cluster has even been featured on an episode of the BBC's Springwatch programme (3 June 2024) in which its results were praised by the presenters.[159]

In Wales there were three farmer clusters in 2024; the CAMLAD Valley SMS[161], the Cynnal Coetir Elwy Valley SMS and the Bro Cors Caron SMS. The Welsh Government's Sustainable Management Scheme (SMS), which initially funded the three Clusters, had the purpose of "supporting collaborative landscape scale projects taking action to improve the resilience of our natural resources and ecosystems in a way that also delivers benefits to farm businesses and rural communities. It will also support the reduction of greenhouse gases from the sector and the vital action needed

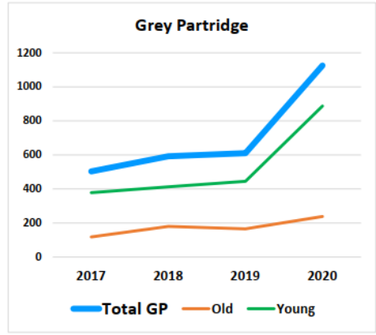


Figure 2: Grey partridge count at Martin Down Farmer Cluster[160]

to help farm businesses and rural communities adapt to the impacts of climate change." [162]

The SMS was a clear sign that the Welsh Government recognised that by supporting joined-up, collaborative action at the right scale, it could "maximise opportunities to improve the services our natural resources provide, reduce the very real risks of climate change to our rural businesses, infrastructure and communities, and meet our international responsibilities and obligations, while taking full advantage of the economic opportunities available to the agricultural sector and rural businesses".[163] However, the scheme was bedevilled by bureaucracy and delays in making payments: the Bro Cors Caron SMS waited over 12 months for its 'advance payment' to arrive and claims typically took months to process resulting in delays to on-the-ground project work. However, the concept of SMS support for farmer clusters, if not the operation, was widely welcomed by farmers.

[159] *See BBC Springwatch highlights how the hard work of the Martin Down Farmer Cluster and the GWCT is making a difference for wildlife, soil and water - Game and Wildlife Conservation Trust.*

[160] *Source: farmerclusters.com/case-studies/martin-down-supercluster/*

[161] *Sustainable Management Scheme.*

[162] *Source: gov.wales/sites/default/files/publications/2018-09/sustainable-management-scheme-frequently-asked-questions.pdf*

[163] *Ibid.*

"After two days talking with many people with an interest in land management in Wales (at the Royal Welsh Show in 2024) I have been struck by the unanimity of the view that bottom-up conservation initiatives such as the Farmer Cluster model are the only to get nature restoration to work in Wales. Welsh government know this because it has worked so well in the SMS projects, but sadly it seems they are not brave enough to embrace the very real potential that is on offer."

Welsh Farmer, 24 July 2024

New hedges have been established on the Bro Cors Caron cluster farms

Case Study 4: Bro Cors Caron SMS

The Bro Cors Caron Farmer Cluster consisted of a group of eight farmers, managing in total c. 1,900 hectares, bordering the northern end of the Cors Caron National Nature Reserve.[164] Farmers taking part wanted more wildlife on their land, but had to keep running their businesses. They received funding from the Welsh Government's Sustainable Management Scheme, with their project running from June 2021 to June 2023, with a three-month extension to September 2023. The Cors Caron National Nature Reserve was invited to join the project, but did not take up the opportunity.[165]

The cluster set up a Community Interest Company (CIC) to manage the project, with a small steering group that had to be consulted and agree with any decisions made. There was also an advisory group for the project, with individuals from a variety of local and national organisations. The cluster employed a Wildlife Warden (0.5 full-time equivalent), a Project Manager (0.6 full-time equivalent) and three other staff (all part-time).

The SMS project had the aim of increasing farmland biodiversity, enhancing habitats, and improving soil and water quality. It also wanted to improve the local community's well-being by enhancing social connections, and the traditional and historical connection between community and land.

Surveys were undertaken on each farm, to establish baselines with which to measure the impact of project actions, and biodiversity plans prepared for each farm. The collective plans were designed to produce the best possible outcomes at landscape level, magnifying each farm's contribution by joining up habitats and creating wildlife corridors with their neighbours. Contract works were undertaken by local agricultural and ecological habitat management contractors.

By working together, since June 2021 the cluster has:

- Planted 4.4 kilometres of hedges to create a wildlife corridor between three farms;
- Installed 235 nest boxes and 45 farmland feeders with bird seed mixtures;
- Employed a Wildlife Warden to carry out predator control;
- Carried out 20,000 metres of fencing work to protect habitats such as woodland and streams, creating 'buffer strips' between fields and natural features;
- Carried out coppicing and bank restoration works;
- Installed water troughs to reduce soil erosion and water pollution from livestock using natural water bodies;
- Introduced new plant species into pastures;
- Planted cover crops (unharvested crops that improve soil health and provide additional nutrients; they also provide a source of food and shelter for small farmland birds and mammals throughout the year: seeds during the winter, and insects during the summer.);
- Created areas of in-field wetland;
- Installed rainwater harvesting systems;
- Run events for schoolchildren and the local community;
- Hosted tours for Members of Senedd and the Direct of Rural Affairs.

The short duration of the project means that it is too soon to know the impact of the cluster work on wildlife. However, the habitat management, feeding and predator control carried out bode well for birdlife, including red-listed species such as curlew and lapwing. It is encouraging to note that the Wildlife Warden has been retained to continue the predator control work which, the farmers were pleased to note, has resulted in fewer lambs being lost to foxes. It is even more encouraging that the Bro Cors Caron Cluster has continued to operate to deliver their biodiversity and community engagement aims, albeit with a reduced level of activity now the funding has ceased.

Sadly, the members of the cluster were disappointed with the way their SMS project was administered by the Welsh Government. As one said: "We would be hesitant to join another scheme or anything similar. We would need to be reassured that the funding would be improved and more available."

The Bro Cors Caron Farmer SMS did demonstrate that farmer-led schemes promoting economically viable farmed landscapes and increased biodiversity was completely possible and cost effective. It is thus most disappointing to report that members of the cluster now regard the SMS as a 'token effort' as the new farm regime for Wales was designed by the Welsh Government before the SMS projects had ended and their lessons fully understood.

Individual Farms

It is certainly the case that individual farmers can produce significant increases in biodiversity, benefiting plants, mammals, birds and insects by changing management regimes to produce a mosaic of different habitats. Furthermore, these significant increases can be delivered quickly within a year (Lewis-Stempel, 2016), although small scale initiatives inevitably have a limited impact. At Loddington on the Leicester/ Rutland border, the GWCT has shown since 1992 that it is possible to run a commercial 320-hectare mixed arable and livestock farm and deliver very positive environmental benefits.[166] Long-term experiments run at Loddington have demonstrated that for wild birds to thrive, three things are required: the right habitat (which on many farms has been created); provision of food in winter (for those birds that do not migrate to other areas); and legal control of predators (especially, but not solely, carrion crows and foxes).

[164] *See naturalresources.wales/days-out/places-to-visit/mid-wales/cors-caron-national-nature-reserve/?lang=en*

[165] *The author was told in an interview that one possible reason for the National Nature Reserve not joining the cluster was because the current management of the reserve is 'violently opposed' to predator control. Previous reserve managers had controlled some predators.*

[166] *See rase.org.uk/news/the-allerton-project-a-farm-case-study/*

Wetland and meadow at Cruglas Farm

Case Study 5: Cruglas Farm, Ceredigion, Wales

Cruglas Farm is a 300-hectare land holding in mid-Wales specialising in livestock production. The current owner bought the farm in 1995 with the aim of demonstrating that "farming does not have to be a constant battle to control nature", but could be more sustainable with wildlife flourishing alongside a viable livestock business, supplemented by holiday home lets and tenancies.

Major investments were made in agricultural infrastructure: new cow shed, new hay barn, new machinery shed, expanded lamb nursery, and new silos. In addition, the water distribution system on the farm was replaced (a spring and two ancient wells now feed three 10 cubic metre tanks, which send water by gravity to troughs in every field), and miles of fences were replaced, over 100 gates were replaced or repaired, and all farm tracks were upgraded.

A major environmental improvement plan was developed and implemented, funded by the owner with support from the Countryside Commission for Wales, the Forestry Commission, the Shared Earth Trust and various Welsh Government Stewardship schemes. Over 16,000 metres of hedging has been planted, along with 20 hectares of broad-leaved woodland (more than 165,000 trees and shrubs of 60 different species), six hectares of wildlife ponds, and eight hectares of wetland has been fenced off to exclude livestock. A hectare of wild bird seed crops (to provide food for birds in winter and spring) have been established and over 300 nesting boxes erected for owls, kestrels[167], robins, pied flycatchers, house martins, and various species of tits and sparrows. An artificial nesting bank for sand martins was built in one of the ponds in 2013.

Together with environmental improvements, a programme of predator control was implemented. The American mink has been eliminated from the River Teifi and feeder streams, to the benefit of a local population of water voles.[168] Grey squirrel numbers are controlled, as are foxes. (Extraordinarily, contractors working for a nearby urban area release the foxes trapped in towns onto a National Nature Reserve which surrounds the farm on three sides, and these foxes inevitably stray onto the farm. The farmer finds it shocking that a National Nature Reserve is regarded as a suitable place for dumping urban foxes, especially when ground- nesting birds already face many pressures.) Carrion crows are controlled in early spring to protect young songbird populations.[169]

The outcomes for bird life have been staggering. Regular bird counts have been conducted since 2000, since when 146 species have been recorded at Cruglas, of which 80 have bred. The owner said:

"*We monitor the population changes of 35 species and have noted huge increases in some warbler numbers for instance. Moreover, we calculate that our new ponds and lakes have attracted 40 bird species which we might not otherwise have seen. Species of note which have bred on the farm include goshawks, red kites, ravens, barn owls[170], long-eared owls, redstarts, whinchats, reed, sedge and grasshopper warblers, teal, graylag and Canada geese, curlews, snipe, lapwings, little-ringed plover and water rail. Winter visitors include a small flock of whooper swans, hen harriers, merlins, peregrines, short-eared owls and the occasional bittern. Rarities turn up as well and we have hosted common cranes, long-tailed ducks, a red-breasted goose, spotted crakes and great egrets in recent years.*"

This extraordinary bird record is accompanied by the farm hosting over 30 species of mammal (including eight species of bat), 40 types of butterfly and dragonfly, and plenty of reptiles and amphibians.

These results have been delivered on an area of land of just 300 hectares!

[167] *From one kestrel nesting box, at least 70 chicks have fledged since 2000!*

[168] *An initiative that is widely supported, among others by the University of Cambridge, see The mink must go (cam.ac.uk) 13 August 2024.*

[169] *Cruglas used to control magpies, under a general licence (GL001), to reduce their predation of nesting and breeding birds. However, since 1 January 2024, magpies can only be controlled if a specific licence is applied for, and granted. It is worth noting that, according to data from the BTO, the magpie population across the UK grew by 100% from 1967 to 2020 nationalgamekeepers.org.uk/articles/magpies-to-be-removed-from-the-welsh-general-licence-from-january*

[170] *90 Barn owl chicks have fledged from the owl boxes since 2000.*

Curlew are frequently seen at Cruglas Farm

There are some interesting, and encouraging, examples of Welsh farmers willingly being involved in landscape-scale conservation projects. On 26 July 2023, at the Royal Welsh Show, a new project aiming to enable curlew numbers in Wales to recover was launched. The project, Curlew Connections Wales, is a partnership project led by GWCT Wales, working with Curlew Country, Bannau Brycheiniog National Park and Clwydian Range and Dee Valley AONB.

Funded by the second round of the Welsh Government's Nature Networks Fund (delivered by the National Lottery Heritage Fund), the project:

"*Aims to tackle the key issues driving the low breeding success of curlew, monitoring and understanding curlew populations within these areas, implementing predator management and habitat works at the forefront. With breeding curlew predicted to be extinct in Wales by 2033, an important aspect of the project is to connect the landscape and people to these iconic birds.*"[171]

The project funding pays for a team of 'Curlew and People Officers' who work closely with farmers, landowners and land managers, alongside a workforce of volunteers to improve the fledging success of local populations of curlew throughout Wales. Money is also available to compensate farmers for disruption to their businesses resulting from curlew conservation measures. In the discussion immediately following the project's launch, a constant theme was:

"*The significant role that farmers and landowners will play in delivering successful curlew recovery. Farmers were time and again highlighted for not only their desire to restore breeding curlews, but also the ability to carry out the groundwork required to ensure success.*"[172]

In July 2024 an update on the project was issued.[173] This update highlighted the importance of engaging and working with farmers and the public, while also providing support to farmers and implementing measures that increases curlew hatch success and chick survival. For example, farmers must give permission for the project team to access their land to see whether curlew are breeding. If a nest is found, ways of protecting the nest are discussed and any necessary financial support is agreed, eg. to

[171] *Source: gwct.org.uk/blogs/news/2023/august/curlew-connections-wales-project-launched-at-the-royal-welsh-show/*

[172] *Ibid.*

[173] *See: gwct.org.uk/blogs/news/2024/july/how-the-curlew-connections-project-is-transforming-wales-curlew-population/*

compensate for any management changes that the farmer may need to make, such as delaying silage cutting for nests or areas where chicks are feeding. Farmers are also being trained on how to support curlews, including legal predator control measures they can take.

The five case studies and the example of the Curlew Connections project, clearly demonstrate that commercial landowners can make a living while protecting and increasing biodiversity. Making a profit, improving habitats, and increasing biodiversity are not opposing aims. Although each of the landowners featured in the five case studies receive taxpayer support in the form of agricultural subsidies, and apply for grants for which they are eligible, they all produce food, have multiple income streams, employ and support significant numbers of people (for their different sizes), and use many local contractors. They are major economic, social and environmental contributors to their localities. Their habitat improvements and biodiversity gains are, although not free to the taxpayer, remarkably good value for money. All landowners featured in the case studies put significant financial and time resources of their own into nature improvement. These five case studies present a clear contrast to the RSPB at Lake Vyrnwy: the case study landowners and managers are commercial but are actively managing their land in ways that evidence has shown produce better habitat and a rich assemblage of bird life, as well as delivering the 'public goods' in terms of carbon sequestration, water quality, etc; the RSPB is dependent on grant funding and its management of the land does not seem to be evidence-based. The commercial landowners are surely providing better value for money.

Interestingly, on 7 August 2024 the UK Government published the 2023 Annual Report for Natural England's Agri-environment Evidence Programme which summarised the findings of seven peer-reviewed research projects completed during 2022 and 2023. The research projects evaluated aspects of Agri-Environment Schemes (AES) in England. These schemes "encourage farmers to protect and enhance the environment on their land by paying them for the provision of environmental services, including the protection of historic features and landscape character. Four studies covered in this report focused on the effectiveness of management options, measuring their uptake and success at delivering desired outcomes".[174] Research findings revealed that higher scheme uptake was associated with greater species richness, diversity and/or abundance among butterflies, moths and two bat species. The study also found evidence that the abundance or species richness of larger and more mobile butterflies, moths and hoverflies was associated with scheme uptake at landscape-scale. This indicates that landscapes with high levels of scheme intervention may support more of these species. More evidence that incentivising farmers, especially farmer clusters, can deliver significant biodiversity gains.

[174] *See publications.naturalengland.org.uk/publication/5416943646146560*

Threats to Commercial Land Management's Ability to Maximise Biodiversity in Wales

Increasingly, commercial landowners and managers in the UK are operating in ways that deliver important environmental as well as economic, social benefits. Although some are recent 'converts' to biodiversity because of changes in agricultural subsidies, it is heartening to note how many estates and farms have been 'nature friendly' for decades. Whereas the larger estates have the size to make a difference on their own, the advent of farmer clusters means that new landscape-scale areas enhancing biodiversity have been established, with some so-called 'Super Clusters' being even bigger. Individual farms, if above a certain size, can produce outstandingly impressive results for biodiversity.

All the commercial operations featured in the case studies receive agricultural subsidies, as well as taking advantage of various stewardship and conservation grants that are available to them. Farming in the UK must be supported by subsidies as costs of production far exceed the prices that the consumer pays for food produced in Britain, the key issue is what the subsidies are paid for. When subsidies were for food production (tonnes of grain, number of sheep, etc) intensification of agriculture inevitably resulted. As subsidies move to payments for biodiversity and natural capital, we should confidently expect increasing numbers and varieties of flora and fauna on the UK's agricultural land; assuming, of course, that the subsidy regime is operated in a way that encourages farmers to take it up. What the case studies in this section show is that, before the agricultural subsidy system changed, estates, farmer clusters and individual farmers were managing their land in ways that produced high-quality and varied habitats that (together with legal predator control and some supplementary feeding[175]) resulted in impressive environmental and biodiversity outcomes. Although not arguing that nature reserves are not needed, this report is making the important point that the people who can, and often are, making the greatest efforts to counter the biodiversity crisis in the UK are those people who manage their land to make a living.

However, there are several factors that will, if not addressed, limit the ability of commercial landowners in Wales to produce food while delivering increased diversity. Each of these factors must be considered, and countered, if agricultural land in Wales is to produce food sustainably and deliver the cost-effective biodiversity gains that it is capable of doing.

[175] *The positive impacts of supplementary feeding and wild bird seed mix cover crops on farms in Wales is shown by the results of The Welsh Farmland Bird Initiative/Menter Adar Ffermdir Cymru project reported in March 2023. The density of birds increased by 4.4-fold on a lowland farm and 6.3-fold on an upland farm in winter, and by 1.4-fold on the lowland farm and 1.7-fold on the upland farm during the breeding season. See gwct.org.uk/wales/projects/welsh-farmland-bird-initiative/*

Afforestation and Carbon Credits

Large blue-chip and private equity companies have been buying farms in Wales so they can plant trees on agricultural land as a way of off-setting carbon emissions. Increasingly, private equity companies are investing in forestry taking advantage of the new market in carbon off-setting. One such company, Foresight, created a forestry-based investment trust[176] with the aim of producing a 5% return to investors and sequester approximately four million tonnes of carbon through the planting of new trees, which would enable investors to claim off-setting credits. The impact of such large-scale private investment on local communities and biodiversity will, no doubt, be the subject of study in the years to come.

However, what can confidently be stated at this stage is that the companies dealing in carbon credits are unlikely to contribute to the local economy in the way that farms do. There is a potential significant loss to the Welsh economy when, with effective consultation and incentives, carbon and other ecosystem credits could go to farmers, thus boosting local economies and increasing the viability of rural communities. Without farmers and their families, rural schools and local agricultural suppliers and contractors will suffer. Incidentally, it is farming communities that are a stronghold of the Welsh language.[177] Moreover, the fashion for afforestation is not certain to lead to carbon capture, and there can be many negative impacts on biodiversity, as previous research has clearly shown.

Planting trees on agricultural land does not necessarily result in carbon capture, the wrong tree in the wrong place will result in a net increase in carbon emissions as well as reducing biodiversity, especially in upland areas.[178] Commercial forestry is usually comprised of fast-growing conifer species. The non-native sitka spruce is the most widely used commercial forestry species, with the Forestry Commission (FC) reporting that sitka spruce accounted for around one half (51%) of the UK conifer growing stock, followed by Scots pine (15%) and larch (10%) in 2020 (FC, 2020). Densely-packed coniferous plantations reduce the light available to the forest floor which negatively affects a variety of species (Burton et al, 2018). Sitka spruce-dominated closed-canopy sites have very low numbers of ground flora and a lack of species diversity (Burton et al, 2018; Wallace, Good and Williams, 1992). Although diversity can be improved with lower planting densities, allowing a greater amount of light through to the forest floor (Wallace and Good, 1995; Wallace, Good and Williams, 1992), reductions in density can negatively impact the yield or financial return for the commercial forestry enterprise.

Dense conifer planting of non-native tree species negatively impacts the presence and breeding performance of some bird species such as ravens and golden eagles (Burton et al, 2018; Douglas et al, 2020). More recent changes in design of plantations to include lower planting densities, riparian buffers, areas of broadleaf woodland and open space may not impact these species in the same way (Burton et al, 2018), but these changes to planting density and additional planting requirements have costs that impact profit margins.

Conifers require a large amount of water to grow effectively thus can be useful in alleviating flooding, predominantly in the avoidance of flash flooding. Conversely, their high water demands can produce a negative effect on water yield during periods of dry weather (Burton et al, 2018). Forest canopies can reduce run-off by up to 20%, but clear felling has the opposite impact, meaning that uncoordinated forestry practices can potentially exacerbate flooding (Allen and Chapman, 2001). There is extensive evidence to suggest that coniferous plantations have an acidification effect on soils and freshwater due to their effectiveness at scavenging acid pollutants (Burton et al, 2018; Rees and Ribbens, 1995; Allen and Chapman, 2001).

In terms of carbon sequestration and climate change, afforestation can be a useful tool on open habitats and croplands (Alonso et al, 2012), with coniferous species like sitka spruce recommended for their fast growth and high carbon uptake (Cannell, 1999). However, it is important that afforestation does not take place on areas of peatland, as peat-based soil may dry out, releasing large amounts of carbon, especially in the early years of plantations (Alonso et al, 2012). Friggens et al (2020) showed that even planting native tree species (Betula pubescens and Pinus sylvestris) onto heather moorland in Scotland did not lead to an increase in net ecosystem carbon stock either 12 or 39 years after planting. Rather they found that plots with trees had greater soil respiration and lower carbon levels than control plots that were heather dominant. They hypothesise that tree planting dramatically alters underground mycorrhizal fungi communities, leading to a net loss of carbon.

Conifers require a large amount of water to grow effectively thus can be useful in alleviating flooding, predominantly in the avoidance of flash flooding.

The length of time between planting and clear felling is also important as the longer trees are standing, the more carbon they can capture. The final destination of the timber

Simon Denny displaying a self-sown young conifer he pulled out of a bog at Lake Vyrnwy when touring the estate with the RSPB. The RSPB manager said that by removing the conifer he had become one of the charity's volunteers!

[176] *foresightgroup.eu/news/announcement-of-foresight-sustainable-forestry-company-plc-s-launch-of-initial-public-offering*

[177] *On 13 August 2024 the Farmers' Union of Wales endorsed a recommendation made by the Commission for Welsh speaking Communities on agricultural policies. The Commission's report, 'Empowering communities, strengthening the Welsh language', recommends that the Welsh Government ensures that the Welsh language is a central consideration in agricultural policy. The report points out that 43.1% of the agriculture, forestry and fishing industries' workforce speak Welsh, the highest proportion of Welsh speakers in all sectors of economic activity in Wales. the FUW's President said, "the Commission's recommendation aligns categorically with our belief that the Welsh language should be a central consideration in the development of agricultural and environmental policy, particularly in the makeup of a 'social value' payment through the proposed Sustainable Farming Scheme. Any proposals for future policy which compromise Welsh farm businesses, farming communities or Welsh agriculture in general would represent a significant threat to the industry within which the greatest percentage of Welsh speakers is preserved." Source: Farmers chiefs endorse Welsh language recommendation (nation.cymru).*

[178] *See fenton.scot/ecology/07.%20Favourable%20condition,%20grazing,%20carbon%20-%20J%20Fenton%20-%207%20Oct%202014.pdf*

evidence that large non-Welsh-based companies care for local communities, or the Welsh language and culture. The loss of productive agricultural land to forestry inevitably reduces food production and thus erodes food security, an issue increasingly important since the Russian invasion of Ukraine. Although "land use is not a straight choice, optimal agricultural land must include food production, climate change ambitions and biodiversity enhancement"[183] and not assume that planting trees is a panacea.

The evidence suggests that commercial afforestation can provide some employment (Thomson, McMorran and Glass, 2018), be financially profitable (Bell, 2014), but most likely only with the support of government subsidy (Hardaker, 2018), and on balance it may not offset CO^2 emissions, despite what private equity companies claim. It also has the potential to hamper biodiversity conservation (Burrascano et al, 2016), especially if other important habitats are lost to make way for plantations. Afforestation on or near peatlands is especially to be avoided as it not only negatively impacts biodiversity on the forested site itself, but also reduces it on neighbouring open peatland adjacent to planting sites (Crane, 2020). It is particularly important that landscapes on peat soils are not replaced with forestry, as the carbon released from peat is greater than the benefit gained from the plantation of forests (Cannell, Cruickshank and Mobbs, 1996; Alonso et al, 2012).

is also a factor to consider when comparing forests with other carbon sequestration tools, such as renewable energy use from wind and solar farms. If the timber is used for wood burning then carbon is released and although not adding to net emissions, payback times until the carbon is reabsorbed can be long (Crane, 2020).

The influence on climate of afforestation is wider than just the carbon cycle. Other factors such as albedo[179], evapotranspiration[180] and aerodynamic surface roughness length[181] can mean that the net effect of forest plantation can be negative (Crane, 2020; Burrascano et al, 2016). However, at UK latitudes the evidence for whether the overall climate effect is positive or negative are contradictory (Montenegro et al, 2009).

In terms of public response, there has been some opposition in Wales[182] to large-scale afforestation, expressing fears that large-scale plantations are creating 'ecological dead zones' and destroying the habitats of birds such as curlew and hen harriers to meet carbon sequestration targets (Colwell, 2018). Moreover, there is little

[179] *Albedo relates to the ability of land to reflect or absorb heat. Light surfaces, like open snowy areas, reflect heat having a cooling effect whereas dark areas, like densely planted coniferous forests absorb heat more easily having a warming effect.*

[180] *Evapotranspiration is the process by which water is transferred from the land to the atmosphere by evaporation from the soil and other surfaces and by transpiration from plants*

[181] *"Aerodynamic roughness length is usually defined as the height where the wind velocity is equal to zero. It is an important aerodynamic parameter and reveals the exchange between the atmosphere and land surfaces." (Zhang et al, 2017).*

[182] *See, for example walesonline.co.uk/news/wales-news/carbon-ofsetting-companies-uk-calculator-22464381 and bbc.co.uk/news/uk-wales-61039303*

[183] *Andrew Connon, NFU Scotland vice president, 22 December 2021.*

Agricultural Environmental Schemes in Wales

The recent record of the Welsh Government in relation to agriculture and biodiversity is mixed. The, previously mentioned, SMS was funded through the Welsh Government Rural Communities: Rural Development Programme (WG RC-RDP) 2014 to 2020.[184] It had the purpose of supporting *"collaborative landscape scale projects taking action to improve the resilience of our natural resources and ecosystems in a way that also delivers benefits to farm businesses and rural communities. It will also support the reduction of greenhouse gases from the sector and the vital action needed to help farm businesses and rural communities adapt to the impacts of climate change."* [185] The Welsh Government claimed that by supporting joined-up, collaborative action at the right scale, it could *"maximise opportunities to improve the services our natural resources provide, reduce the very real risks of climate change to our rural businesses, infrastructure and communities, and meet our international responsibilities and obligations, while taking full advantage of the economic opportunities available to the agricultural sector and rural businesses".*

Initially, reactions to the SMS were positive, with one conservationist involved in two SMS projects describing it as "a stroke of genius, money would go to local practitioners to get ideas of what worked".[186] Bids were submitted by 53 groups of landowners and managers, of which nine were chosen for funding. Four SMS projects, which ran at different times between 2019 and 2023, were reviewed for this report and generated some interesting learning points, summarised in Table 10.

[184] *See gov.wales/sustainable-management-scheme*

[185] *Source: gov.wales/sites/default/files/publications/2018-09/sustainable-management-scheme-frequently-asked-questions.pdf*

[186] *Interview with conservationist, 26 April 2024.*

Table 10: Lessons from four SMS projects

SMS	Learning
A	Farmer clusters worked well, developing a shared sense of community; Farmers wanted more wildlife, but had to keep running their businesses; Nature conservation actions by farmers were attractive to big business purchasers of farm produce; Small amounts of SMS funding enabled conservation actions; Wildlife warden employed for duration of project to do low level predator control (especially on foxes that were killing lambs) increased ground nesting bird numbers.
B	Three landowners involved; Invested SMS funds in GPS collars for cattle to track and limit movement on upland; GPS collars enabled cattle to be excluded from nesting sites; Cattle over 18 months old benefited from being on upland, younger cattle lost condition; Heather management, bracken management and fencing improved.
C	Invested SMS funds in GPS collars for cattle to track and limit movement on upland, enabling cattle to graze the uplands for the first time in decades; GPS collars enabled cattle to be excluded from nesting sites; Quality of grass (mollinia) on uplands has improved and area of wetland has increased; Legal predator control has increased ground-nesting bird numbers.
D	Bracken management (spraying now regular mowing and baling) has opened-up large areas of hillside, increasing ground nesting bird numbers; Low level predator control (especially of crows) increased ground-nesting bird numbers; SMS funding enabled improvements to tracks, footpaths, cattle grids, fencing, and gorse management.

However, as seems to be inevitable with Government-funded projects, the bureaucracy involved with the SMS caused problems for the schemes that were funded. As noted above, the Bro Cors Caron SMS partnership waited over 12 months to receive its 'advance' payment and claims for payments under the scheme took months to be settled, meaning that project work was continually delayed. The farmer cluster that took part in this SMS has no plans to apply for more funding: "It's a case of once bitten, twice shy."[187] Another SMS in North Wales described the scheme as an "administrative nightmare". [188]

Despite the issues involved with SMS project bureaucracy, the scheme did point a way ahead for landscape-scale conservation in Wales. It demonstrated that when farmers were involved in – and paid – for conservation efforts on their land, improvements to the natural environment were both relatively quick and cheap to make. When policy makers were willing to delegate and not try to micro-manage, farmers were capable and willing to do what works for conservation. It is thus very disappointing to note that the new SFS farm regime in Wales was devised before all the SMS projects ended. As noted above, one farmer involved in a SMS farmer cluster claimed: "The SMS was a token effort."

There was also concern that some of the decisions of the Welsh Government appear to be driven by ideology rather than evidence. In 2023 it refused to accept an amendment to its Agriculture Bill, which would have permitted the use of humane cable restraints (HCRs) under licence. This decision ignored the relevant peer-reviewed science relating to animal suffering and the value of HCRs in protecting red-listed ground-nesting birds, including the curlew (a species predicted to be extinct in Wales by 2033 unless effective protection measures are implemented) and black grouse. Yet in June 2024 it was announced that the Welsh Government's Nature Network Programme[189] was funding a project to monitor numbers of black grouse and "deliver best practice for sustainable upland management for a wide range of species".[190] Interestingly, this project will be carried out by RSPB Cymru, NRW and Clwydian Range and Dee Valley National Landscape. Private landowners seem not to be involved, which is a shame given the very mixed record of conservation organisations in preserving, let alone increasing, ground-nesting red-listed birds in Wales.

There must be a danger that with average farm incomes in Less Favoured Areas (LFAs, which amount to some 79% of total farmed land) standing at only £24,300 in 2024, and incomes in Severely Disadvantaged Areas standing at £18,600, young people will not enter farming. The resultant loss of succession could easily result in a cascade of upland farm sales to asset management companies. The public goods revenues generated by land sold to such companies will leave Wales, thus negatively impacting the rural economy. It is possible to argue that if the Welsh Government were serious about keeping people farming the land, it would have done a lot more to facilitate a collaboration between farmers to enable them to market their carbon and biodiversity collectively as farmer clusters (as noted above there are only three farmer clusters in Wales). The failure to learn from (or just ignore) the lessons of the SMSs might suggest that the Welsh Government had initially decided to sacrifice Welsh upland farming for the so-called win-win of greatly reducing livestock and getting trees planted over the uplands. The implications for biodiversity on Welsh farms, including the rare assemblage of flora and fauna on the commons (making up 8.2% of land in Wales) and other uplands, are not encouraging. Farmers throughout Wales have shown their frustration with their Government, even lighting bonfires across the countryside on 1 July 2024.[191]

Concern about the Future of Farming in Wales

"The overwhelming view amongst farmers is that the Welsh government just doesn't understand farming and the countryside." Farmer in Wales [192]

"The overwhelming view amongst farmers is that the Welsh government just doesn't understand farming and the countryside."

Farmer in Wales

Farmers in Wales, like farmers elsewhere in the UK, are increasingly concerned about their future. A UK-wide survey conducted in early 2024 shows that farmer confidence in England and Wales is at an all-time low.[193] Additionally, a survey of farmers under the age of 40, again from early 2024, found that 95% of the respondents cited poor mental health as one of the biggest hidden problems facing farmers. The survey found a relationship between average working hours and mental health; those with shorter working hours demonstrated higher levels of mental well-being but 61% of farmers surveyed worked at least a 10-hour day, with 15% working a 14 or 15-hour day, and many rarely or never taking a day off.[194] Moreover, the average farmer in the UK earns only £28,000 a year (in a good year).[195] The average wage in the UK is £35,828 a year.[196] The average income per farm in Wales in 2020-2021 was only £34,300, the lowest of the four UK nations.[197] The income per unit hectare from farming in Wales is considerably lower than in England and Northern Ireland (but higher than in Scotland).[198]

It is not surprising that many farmers in Wales say they do not believe that farming is valued by the Welsh Government and Senedd (especially when comments such as "there is no reason to subsidise agriculture" are made by Members of Senedd).[199] The

[187] *Interview with project co-ordinator 9 May 2024.*

[188] *Interview with Estate Manager, 7 May 2024.*

[189] *naturalresources.wales/about-us/what-we-do/our-projects/nature-projects/nature-networks-information-on-nature-projects/?lang=en*

[190] *birdguides.com/news/funding-secured-for-black-grouse-conservation-in-north-wales/*

[191] *See Farmers across Wales light bonfires to send election agriculture message - BBC News.*

[192] *See scribehound.com/lifestyle/s/on-the-farm/rural-crisis-in-wales-ignored-farmers-and-impending-financial-loss*

[193] *See nfuonline.com/media-centre/releases/press-release-nfu-survey-shows-collapse-in-farmer-confidence/*

[194] *See agriland.co.uk/farming-news/95-of-farmers-under-40-say-poor-mental-health-is-a-big-problem/#:~:text=95%25%20of%20UK%20farmers%20under,by%20the%20Farm%20Safety%20Foundation.*

[195] *See Farmer Salary in United Kingdom - Average Salary (talent.com).*

[196] *See forbes.com/uk/advisor/business/average-uk-salary-by-age*

[197] *Source: research.senedd.wales/media/iuch3jz1/22-47-farming-sector-in-wales.pdf*

[198] *Source: research.senedd.wales/media/iuch3jz1/22-47-farming-sector-in-wales.pdf*

[199] *See farmersguide.co.uk/business/politics/nfu-criticises-ms-hedges-comment-on-farm-funding/*

Welsh Government has recently made 'emergency' cuts to the rural affairs budget, although the entire rural budget, including agriculture, makes up only c. 2% of Welsh government spending. On 19 October 2023 Rebecca Evans, Finance Minister, said that the rural affairs revenue budget would fall by £17.3 million, and the rural affairs capital budget would decrease by £20.2 million. The announcement meant that, since 2019, there have been cuts totalling more than £200 million in funding for Welsh agriculture and rural development. In a response to the announcement, the NFU Cymru Deputy President said:

"*It is a real worry for the industry to see this loss to the budget today. Welsh farming is facing unprecedented challenges, with input costs now 40% higher than they were in 2020. At the same time, farmers need to continue to produce high-quality, safe and affordable food for all in society, helping to meet both domestic and global security challenges. At a time when our farmers are facing a number of high-priority demands, our government has today cut our budget by 7.8%.*" [200]

In contrast with the 2023 cuts to the rural affairs budget, in August 2024 the Welsh Government announced it was giving £13.5 million funding to support Tata Steel's workers and supply chain businesses that were facing job losses if the loss-making plant in Port Talbot closes.[201] The closure would cut up to 2,800 jobs.[202] It should be noted that 50,401 people were working in agriculture in Wales in 2021. Of this total, 75% of these were farmers, business partners, directors and spouses. The rest were employees, incorporating regular employees, managers and casual workers. The number of people working in agriculture in Wales declined by 13.6% between 2015 and 2021, due to the loss of 4,252 regular employees, salaried managers and casual workers and 3,666 farmers, business partner, directors and spouses.[203] The Welsh Government, in common with governments in other parts of the UK, treats agriculture differently from other industries, despite farming (and fisheries and forestry) employing nearly 2% of total employment in Wales. [204]

Additionally, and importantly for the future of biodiversity in Wales, farmers seem to increasingly believe that the Welsh Government does not understand agriculture (as well as not valuing it). The 'top-down' one-size-fits-all approach of the Welsh Sustainable Farming Scheme (SFS), the initial version of which had 17 universal actions, was seen as overly proscriptive and bureaucratically burdensome by most Welsh farmers. As one farmer interviewed for this report said:

"*The language of the scheme is repetitive, unnecessary and almost calculated to put off farmers. There are 17 universal actions we are all supposed to take, no matter what our farm is like, and they come with a range of compulsory online courses.*"[205]

The first version of the SFS in Wales had a requirement for farms to have 10% of their land covered by trees (but disappointingly not hedges, although they have multiple benefits for carbon capture and wildlife, and in England are now covered by the Management of Hedgerow Regulations[206]), and a further 10% managed for nature (the Universal Actions contained in the scheme) if they want to claim subsidies. There did not seem to include a subsidy directly linked to food production. Moxey et al (2023) point out that the Scheme's flat-rate payments would under-compensate some farms for compliance with the Universal Actions, while over-compensating other farms. This unfairness is inevitable given that farms are not homogeneous, but vary greatly in size, soil, topography, aspect, etc. More importantly, Moxey et al calculated that there would be a reduction in farm business incomes of 25% to 35% and an 11% loss of on-farm jobs. According to Farming UK there have been cuts in funding of more than £200 million for Welsh agriculture and rural development in Wales since 2019, and the value of funding received has fallen by c. 30% due to inflation.[207] The board of NFU Cymru has claimed that: "The Sustainable Farming Scheme proposals have been published against a backdrop of significant budget uncertainty. Together with ongoing uncertainty over future funding, it is eroding confidence and is a cause for alarm at this time of escalating costs for the industry."[208] It further points out that the SFS budget must reflect the scale of the ambition. "There is a need to recognise that inflationary pressures means that this budget needs to rise to over £500 million just to stand still and to meet our shared ambitions for food, climate and nature."[209]

There was a real risk that Welsh farmers would not take part in the SFS and, faced with the future loss of the Basic Payment Scheme[210] may increase stock levels, especially sheep flocks. If this happened there would be a negative impact on biodiversity, the very opposite of that intended by the SFS. Pressure for change to the SFS increased on 22 July 2024 when the Economy, Trade and Rural Affairs Senedd Committee published a report describing the SFS as "beset with delays, miscommunication and unprecedented levels of concern about whether it can deliver,"[211] despite the Welsh Government having worked on the scheme for nearly a decade!

Grounds for Optimism?

"A big risk facing Welsh Government is poor take-up of their repackaged SFS. With no basic payments many farmers I have spoken to talk about walking away from the SFS because the mandatory Universal Actions are too burdensome. Most farmers would love to see nature recovery on their land, so this decision would be made with great reluctance. Then, probably the only option to make up their income deficit would be increased headage of livestock and they are well aware this risks tipping us back into the 'ecological disaster outcomes' of over-grazing, compaction, poor soil health, increased run off. This is not the legacy any of us want or need so Welsh Government's role in creating a trusted dialogue and facilitating farmers to deliver for the environment becomes a crucial one," Owen Williams, Farmer and Chairman of GWCT Cymru.

[200] *See farminguk.com/news/emergency-cuts-to-wales-rural-affairs-budget-a-significant-blow-to-farmers_63503.html 19 October 2023.*

[201] *Steel production at Port Talbot ended in September 2024, see independent.co.uk/business/traditional-steel-production-in-wales-ends-as-last-blast-furnace-shuts-down-b2621233.html*

[202] *Source: Businesses hit by Tata Steel job losses to get government support worth £13.5m (msn.com).*

[203] *Source: research.senedd.wales/media/iuch3jz1/22-47-farming-sector-in-wales.pdf*

[204] *Ibid.*

[205] *Interview 27 April 2024.*

[206] *See legislation.gov.uk/uksi/2024/680/made*

[207] *See farminguk.com/news/emergency-cuts-to-wales-rural-affairs-budget-a-significant-blow-to-farmers_63503.html*

[208] *See nfu-cymru.org.uk/news-and-information/welsh-government-s-sustainable-farming-scheme-consultation/*

[209] *Ibid.*

[210] *See gov.wales/basic-payment-scheme-announced-2023-and-2024*

[211] *See nation.cymru/news/senedd-committee-report-raises-serious-concerns-about-controversial-farm-subsidy-scheme/*

[212] *See gov.wales/sustainable-farming-scheme-guide*

[213] *See nation.cymru/news/sustainable-farming-scheme-ministerial-roundtable-launched/*

[214] *See wired-gov.net/wg/news.nsf/articles/Rural+Affairs+Secretary+chairs+first+SFS+Roundtable+06062024091000?open#:~:text=The%20Cabinet%20Secretary%20for%20Climate,the%20Sustainable%20Farming%20Scheme%20Roundtable.*

[215] *See nation.cymru/news/new-time-frame-announced-for-controversial-farm-subsidy-scheme/*

[216] *See bbc.co.uk/news/articles/cpdv3z7ej5po*

However, there are possible grounds for cautious optimism. Although consultation on the SFS officially ended on 7 March 2024[212] the scheme has been delayed by a year (to 2026) and an SFS Ministerial Roundtable was launched[213] with its first meeting held on 6 June 2024.[214] There is clearly scope for the SFS to be amended and improved. Civil servants in Cardiff have been talking with farmers and relevant expert bodies about sustainable environmental agriculture. The Deputy First Minister and Cabinet Secretary for Rural Affairs, Mr Huw Irranca-Davies, said on 11 July 2024 that "clear changes" needed to be made before the programme could be introduced. He added that no decisions on the SFS's design had yet been made.[215] Sensibly, the requirement for Welsh farmers to have trees on 10% of their land to qualify for the SFS has been dropped and replaced by a tree planting and hedgerow creation plan. Mr Irranca-Davies has said he is "committed to listening to and working with our stakeholders to ensure the final scheme… will help support the economic resilience of farming businesses, the sustainable production of food, our climate and nature objectives and our rural communities for current and future generations".[216] The willingness of the Deputy First Minister of Wales to listen to and work with farmers and other rural stakeholders is in stark contrast to the position that has been taken by the Westminster government over agricultural property relief.

The SFS needs to evolve if farmers in Wales are to take part in it and deliver their full potential environmental and biodiversity impacts, while making a commercial return from their land. If the scheme does not evolve, then there must be a real danger that the farmers of Wales, who manage more than 70% of the land in the Principality, will not be willing or able to maximise biodiversity and will not deliver the types of results the case studies show can be achieved. This would be a massive 'own goal' for Wales as commercial agriculture has the potential to produce greater economic, social and environmental outcomes than nature reserves, in a more cost-effective way. However, if the SFS was designed and operated in such a way that farmers wanted to take part in it, then the impacts on habitat and biodiversity would be both positive and very large-scale. The Welsh Government has an excellent opportunity to support both farming and nature in Wales.

Value for Taxpayers' Money?

The three stakeholders which own or manage Lake Vyrnwy are, as noted previously, Severn Trent (through its Welsh operation, Hafren Dyfwdwy), United Utilities and the RSPB. All these organisations have incomes that dwarf those of individual estates and farms in Wales. Severn Trent and United Utilities are monopolies in their respective areas, their customers being individual consumers and public and private sector organisations, most of which pay tax.

It is worth noting that water companies, even if profitable, can apply for taxpayer funds to help manage their land holdings. In 2023 Hafren Dyfrdwy (acting with the support of the Lake Vyrnwy Stakeholders Forum[217]) was awarded £206,300 by the National Lottery Heritage Fund, in partnership with the Welsh Government, for a project to "create, restore and enhance woodlands". Hafren Dyfrdwy is using the money to improve access to the reservoir and improve biodiversity. According to the Powys County Times of 19 October 2023 the project "will make the Campbell Trail easier to access while the Reservoir View Trail will have drainage and surface improvements installed. New direction way-markers will be installed to connect the Lake Vyrnwy walking trails with national trails and the Dyfnant Forest." The newspaper quotes John Telford, rural estates property manager at Hafren Dyfrdwy which manages the site as saying: "The project will enhance the visitor experience for all, connecting people to the rich history of the valley and the natural environment, while allowing those with mobility issues to enjoy the area as well." [218]

The RSPB

The RSPB is, as noted previously, best viewed as a long-term tenant and partner of Severn Trent/Hafron Dyfrdwy. It is the conservation partner in the triumvirate. Its annual reports for the past five financial years were viewed as part of the research for this report. Unsurprisingly, the RSPB's annual reports are well presented and contain the detailed information expected of a large charity.[219]

The 2022-2023 Annual Report shows that total income for the year was £164.7 million (a £7 million increase on the previous year). Member income amounted to £46.0 million (from 1.14 million members); legacy income was £44.2 million; grant income was £26.4 million; trusts and corporates donated £9.3 million; and commercial trading generated £23.7 million. The RSPB is a very large charity with multiple income streams.

During the year the RSPB made 84 grants, with a total value of £6,626,207 (with additional support costs of £369,142) to 41 UK organisations (including the National Trust, the Royal Botanic Gardens Kew and Powys County Council), and 43 overseas organisations (including Nature Iraq, the Chinese Wild Birds Federation, the

[217] *This bid does not simply represent an example of a private company receiving taxpayers' money to help manage its own asset.*

[218] *See countytimes.co.uk/news/23866052.powys-woodlands-given-300-000-funding-including-lake-vyrnwy/*

[219] *See rspb.org.uk/about-us/annual-report/annual-report-archive This archive is the source of much of the data that is in this section of this report.*

[220] *This figure is contained in the 2019-2020 Annual Report.*

[221] *See naturalresources.wales/about-us/what-we-do/strategies-and-plans/business-plan-2023-24/?lang=en*

[222] *It is not clear how NRW identifies which of its grants provide value for taxpayers' money. Moreover, it appears that it is not professional at managing its finances. In October 2024 the BBC and other news outlets reported that the Welsh Government had paid £19 million to settle a tax bill from HMRC for NRW. The organisation's annual accounts had revealed a potential liability related to specialist contractors. Mr Huw Irranca-Davies, Deputy First Minister and Cabinet Secretary for Climate Change and Rural Affairs in Wales, was quoted as saying: "I have asked my officials to work with NRW to develop enhanced monitoring arrangements to provide assurance and confidence in the oversight and financial and risk management arrangements in place." NRW was reported to be working through budget proposals to save £13m from its budget in the 2025-2026 financial year, including 265 job losses. It is hard to see how such mismanagement represents good value for taxpayers.*

[223] *See naturalresources.wales/about-us/grants-and-funding/grants-awarded/?lang=en*

Nigerian Conservation Foundation, the Society for the Protection of Nature in Lebanon, and Birdlife Malta).

During the 2022-2023 year the charity's expenditure exceeded its income by £1,483,000. It is interesting to note that the expenditure on managing nature reserves (£49.4 million) is not that much greater than expenditure on 'research, policy and advisory' (at £44.3 million, up £6.8 million on 2021-2022); and that the number of staff employed in research, policy and advisory roles (776 staff) exceeds that employed in managing nature reserves (716 staff).

Helpfully, starting with the 2019-2020 Annual Report the RSPB has listed the sources of its larger grants. The Welsh Government or NRW are shown as having made the following grants in the period 2018-2023:
2022-2023: £1,301,000
2021-2022: £1,252,000
2020-2021: £1,696,000
2019-2020: £1,000,500
2018-2019: £875,000[220]
Total 2018-2023 = £6,124,500

This information is valuable as the Welsh Government has provided lists of the grants it has given to the RSPB between 2014 and early 2022 in response to requests for information received in 2020 and 2022. However, it should be noted that the responses from the Welsh Government only list the grants it has given, not those given by NRW. The Welsh Government said that it gave a total of £1.417 million in grants to the RSPB from 2017 to early in 2022, a much lower figure than the total of £6.12 million noted above. But NRW is funded largely by the Welsh Government, as its business plan for 2023-2024 notes:

"*Our funding comes from several sources, with the majority as Grant in Aid from Welsh Government – both revenue and capital, with a proportion ring-fenced for our flood and coastal erosion risk management work. Our other funding sources are from our commercial activities (including timber sales), charging, Welsh Government grants and other grants (such as from the Lottery and formerly EU grants).*"[221]

Moreover, NRW receives a Remit Letter at the start of each financial year setting out what the Welsh Government wants it to achieve during that year.[222] It is an operating agency of the Welsh Government which has grant giving powers[223] and gives grants to the RSPB, and has award grants worth c. £4.7 million to the charity since April 2018 (not including any grants given in the 2024-2025 financial year). Therefore, the total amount of Welsh taxpayers' money that the RSPB has received since 2018 is well over £6 million. Of course, not all this money has been for projects at Lake Vyrnwy. In fact, it is not obvious how much of this £6 million plus has been given for projects at Lake Vyrnwy as, although some grants are for specific initiatives, others are for schemes not limited to the area eg. three Nature Fund Grants were awarded to the North Wales Moors Futurescape programme which incorporated Lake Vyrnwy. It is certain that NRW has awarded three grants to the RSPB since 2022,[224] one of which was for the Berwyn SAC (value £54,997) and another included the North Berwyn Area (value £122,046). However, it is not certain how much of this money is for work at Lake Vyrnwy.

The Welsh Government made 13 grants between 2014 and 2019 (with a total value of £610,528) from the Single Revenue Core Grant-Policy which gave the RSPB taxpayers' money to enable them to bid (for more taxpayers' money) from "EU and UK funding sources, where they contribute to the RSPB Cymru Saving Nature in Wales outcomes".[225] The award of these grants highlights a very important point, with policy as well as funding implications. Bidding for grants from governmental bodies takes a great deal of time and effort as large amounts of information are required in a bid; including such standard items as the bidding organisation's policies on recruitment, equality and diversity, sustainability, etc. When the author worked at the University of Northampton, he submitted bids that, over a period of 15 years, generated over £9 million in grants[226] for research and other projects (mainly projects trying to reduce disadvantage in Northamptonshire). Because he had a senior position in a university, he could call on the support of the Finance Department and other colleagues for assistance in preparing these bids, and the university had all the relevant policies required by governmental organisations in place. He was also able to free himself from other activities to work on bids. However, interviews with private landowners in Wales show that is very difficult, if not impossible, for individual farmers, farmer clusters or estates to find the time to work on bids to government agencies, even if they had the expertise and all the required policies were in place. Conversely, the RSPB has a large and effective team skilled at making grant applications.[227]

[224] *Grants awarded by NRW since 2022 can be found at naturalresources.wales/about-us/grants-and-funding/grants-awarded/?lang=en. For information about grants awarded before this date, the author had to submit a Freedom of Information request, which is still pending.*

"Our funding comes from several sources, with the majority as Grant in Aid from Welsh Government." **NRW**

By awarding the RSPB over £600,000 to help it to write bids, the Welsh Government was, in effect, making a policy decision: it was building capacity in the RSPB so it could be a (the?) main player in gaining grants for the conservation of bird life and habitat in Wales. Private landowners, whether individual farmers or estates, were not supported to achieve the same aims, despite them owning and managing some three quarters of the land in Wales, and in many cases making a very positive contribution to biodiversity. This policy decision would, of course, be entirely appropriate if the RSPB was managing reserves in Wales that were maintaining, and where possible increasing, the numbers of birds, especially threatened red-listed birds, and delivering high-quality 'public goods.'

[225] *Source: Letter from Mr G Burns, Economy, Skills and Natural Resources, Welsh Government Business Unit dated 4 February 2020 (ref ATISN 13679).*

[226] *It is worth noting that the University of Northampton did not receive grant money to help it to write bids. The author is rather envious of the RSPB.*

[227] *In its 2022-2023 Annual Report, the RSPB notes that it spent over £44 million on raising funds. Commercial trading costs were £27.7 million, investment management costs were £167,000, and the costs of generating voluntary income were over £16 million. It is assumed that the costs of generating voluntary income include a grant application team; alternatively these costs might come within the £27.4 million spent on research, policy and advisory. Either way, the resources the RSPB has for submitting grant applications are impressive.*

[228] *Source: 29 new projects that will help 'Team Wales' tackle climate and nature emergencies (gov.wales).*

[229] *See rspb.org.uk/about-us/grant-funding/nature-restoration-project-grant-funders*

[230] *See tnlcommunityfund.org.uk/funding/grants/0045181640*

[231] *See countytimes.co.uk/news/24163819.welsh-government-backs-powys-tree-nursery-lake-vyrnwy/*

Lapwing breed on grouse moors, but not at Lake Vyrnwy

The RSPB has also been awarded Lottery funding for its work at Lake Vyrnwy. It should be noted that some of the bids submitted to the Lottery were on behalf of Lake Vyrnwy stakeholders and were supported by local groups. In 2021 the bid described earlier in this report was submitted to the Heritage Lottery Fund for £3.3 million (the Welsh Government contributed £12,000 towards the costs of writing the bid, which had taken c. two years to produce). It was unsuccessful, but a revised bid resulted in an award of £497,100. This award was for a project that aimed to improve the condition and resilience of the RSPB's landholdings around the Lake Vyrnwy Estate, benefiting from a wider programme of work. This funding would "support key conservation actions including blanket bog restoration on former conifer plantation, predator control, landscape scale approaches, including farmer-led support, and enhanced conservation grazing".[228]

Some Lottery Funding is disbursed on behalf of the Welsh Government, for example the Heritage Fund Wales distributed the Nature Networks Fund for the Welsh Government. This fund was used by the RSPB in Wales to:

- Study how woodland creation in Wales can help deliver benefits for the climate, nature, people and the economy.
- Discover opportunities for creating new woodland in key black grouse areas in Wales to benefit both nature and people.
- Carry out an independent review to help us understand how we can do our bit to tackle the climate, nature and economic crises through green job opportunities and workforce training.
- Evaluate the toolkit we use to make sure our projects are as inclusive as possible, with our Giving Nature a Home in Cardiff project as a pilot.[229]

The second objective is particularly relevant to Lake Vyrnwy.

Table 11: Recently funded projects at Lake Vyrnwy

Date	Funding body	Amount of grant £	Project Aims
March 2021 to March 2025	Community Fund	282,891	Project provides a range of community opportunities training and events at the Lake Vyrnwy nature reserve in Powys. The focus of the project is on conservation and farming allowing the local community to gain skills promote positive relationships and reduce social isolation.[230]
2024	Welsh Government through Wales Council for Voluntary Action	Not known	Create a community tree nursery at the north end of Lake Vrynwy.[231]

"Support key conservation actions including blanket bog restoration on former conifer plantation, predator control, landscape scale approaches, including farmer-led support, and enhanced conservation grazing."

Other recently funded projects at Lake Vyrnwy include those shown in Table 11.

The RSPB is also, as noted above, a partner in the Lake Vyrnwy stakeholder group. The group has submitted bids, some of which have been successful. For example, in 2022 it was part of a bid from Powys County Council which secured £210,400 from the Welsh Government's Brilliant Basic scheme for its Powys Visitor Experience Project. The stakeholder group was allocated £95,000 for its Visitor Experience Scheme which saw car park improvements, the installation of picnic benches and cycle racks, improvements to bird hide access around the Lake, improvements to two walking trails to enhance access, the upgrading of a picnic area as well as the restoration of metal railings around the lake. [232]

The RSPB has received taxpayers' money to help fund its management of Lake Vyrnwy for many years. Hafren Dyfrdwy has also received taxpayers' money for the same purposes. Given the outcomes for habitat and bird life on the reserve since 1977, it is not clear that the taxpayer has had good value for its money.

[232] *See: en.powys.gov.uk/article/12976/Visitor-Experience-Project-gets-Brilliant-Basics-boost*

It is not clear that the taxpayer gets good value for its money at Lake Vyrnwy

Conclusions

The RSPB has done some good work in pursuit of its principal objective. With more than one million members, it is Europe's largest wildlife conservation organisation. The charity manages 222 nature reserves in the UK covering an area of over 158,751 hectares, providing a home to over 18,500 species.[233] Its work to help re-establish the avocet at Minsmere and Havergate Island just after the end of the Second World War is a model of conservation in action, with the effort put in by volunteers being graphically described by Stanford (1954). The reserve at Frampton Marsh[234] in Lincolnshire has been described by leading conservationists as 'excellent', the results of the Curlew Life project on the Antrim Plateau in Northern Ireland are most encouraging,[235] and the agroforestry trial at Hope Farm in Cambridgeshire is an interesting example of good practice.[236] However, managing 222 reserves is a difficult task for any organisation and, in the case of Lake Vyrnwy there must be a concern about some of the outcomes of the RSPB's management of the area given the amount of taxpayers' money it has received. It is not certain that RSPB Lake Vyrnwy provides the best value for money when it comes to the conservation of some red-listed species. As RSPB authors themselves point out, fewer than 2% of the UK's breeding curlews are found on RSPB reserves (Douglas et al, 2021).

The restoration of blanket bog that the RSPB has managed at Lake Vyrnwy is undoubtedly impressive. However, this work has been very largely carried out by contractors and paid for by the taxpayer. Moreover, it can be argued that the RSPB has been slow to rewet its moorland compared with many other moorland owners. As noted in the report, the Raby Estate was rewetting on a large scale in the 1980s, using its own staff for much of the work. The restoration of blanket bog at Lake Vyrnwy is certainly not unique or pioneering.

It is not possible to say with certainty how much money the RSPB reserve (including the farm) at Lake Vyrnwy has received from the public purse since 1977. However, it is safe to say that it is a very large sum, and considerably greater than any farmer or estate owner in Wales has received for conservation work. Of course, the RSPB does not have a free hand at Lake Vyrnwy; as already noted, it is not the landowner and it has to work with two powerful water companies, but it has had a lot of taxpayers' money and it is thus disappointing that the 2021 bid for more public money said that the reserve was in a poor state (see The State of Lake Vyrnwy in 2021, above), with very few of the birds remaining that meant it was designated as an SPA in the first place. At Lake Vyrnwy the RSPB is focused on long-term

[233] *Source: rspb.org.uk/about-us/our-ethical-principles*

[234] *rspb.org.uk/days-out/reserves/frampton-marsh*

[235] *curlewlife.org/project-sites/antrim-plateau/*

[236] *Agroforestry: Getting the lie of the (farm)land | The Allerton Project (allertontrust.org.uk).*

[237] *Interviewed on 31 May 2024.*

environmental improvement goals that it expects and hopes may maintain and increase bird numbers. However, as noted above, its 'light-touch' management of bracken, the potential wildfire risk, the lack of effective predator control, together with the lack of a concerted tick control strategy, mean that ground-nesting birds will struggle to survive, let alone prosper, for many years to come. It is, perhaps, not surprising that one farmer, local to the reserve said: "Lake Vyrnwy is a funding failure."[237]

The RSPB is, of course, perfectly entitled to apply for taxpayers' money from the Welsh Government, NRW, the Lottery, and other sources. The charity has a professional and experienced team of bid writers, a resource that estate owners and farmers cannot afford. Funding bodies responsible for disbursing money for projects can support any eligible organisation that submits a high-quality bid. However, the Welsh Government's support to the RSPB to enable it to bid for funds must be questioned, given the outcomes achieved at Lake Vyrnwy, and the limited resources (both the number of its staff and the amount of its own money) that the RSPB puts into managing the reserve. Estate owners and farmers certainly put more of their own time and money into managing their moorland than the RSPB does at Lake Vyrnwy, while receiving much less funding from the Welsh Government and other bodies for habitat improvement works. Despite the imbalance in the allocation of funds, this report has clearly shown that some estates and farmers, especially groups or clusters of farmers, are running businesses that are viable and result in significant habitat improvement and animal life, including birds.

The principal objective of the RSPB is the conservation of wild birds and their habitats. The charity's work at Lake Vyrnwy is admirable in many ways, but it does not represent a cost-effective model for widespread nature recovery; it is very expensive and there can be little certainty in 10 years' time (let alone in 30 years' time) that the habitat and wildlife which led to SSSI, SPA and SAC designations will be present. If the Welsh Government genuinely wants to conserve wild birds and their habitats in a way that gives the taxpayer value for money, then it needs work with commercial landowners and managers to ensure its agricultural policies ensure farms are viable and sustainable businesses, that are effectively incentivised to 'farm for nature' as well as for food. Moreover, estates and farms should be encouraged to work together, in cluster-type models, and supported to enable them to bid for funding to carry out work to improve and increase high-quality habitats and biodiversity, while also delivering public goods.

The funding regime for agriculture is changing. When subsidies were designed for food production (tonnes of grain, number of sheep, etc) intensification of agriculture inevitably resulted. As subsidies move, albeit slowly, to payments for biodiversity and natural capital, we should confidently expect increasing numbers and varieties of flora and fauna on the UK's agricultural land; assuming, of course, that the subsidy regime is operated in a way that encourages farmers to take it up. What this report's case studies show are that, even before the evolution of the agricultural subsidy system, estates, farmer clusters and individual farmers have been managing their land in ways that produced high-quality and varied habitats that (together with legal predator control and some supplementary feeding[238]) resulted in impressive environmental and biodiversity outcomes. Although not arguing that nature reserves are not needed, this report is making the important point that the people who can, and often are, making the greatest efforts to counter the biodiversity crisis in the UK are those people who manage their land to make a living. It is more cost-effective to increase environmental and biodiversity outcomes along with food production than it is to fund reserves that do not deliver the same outcomes due to ineffective management.

This report is not arguing that the RSPB should not be running the Lake Vyrnwy reserve, nor that it should not receive public money to do so. Some of its work in the area is commendable. However, the report does argue that, if governments and funding bodies responsible for allocating taxpayers' money want best value for that money, then they should ensure that attractive funding schemes are available to estates and farms that will want to apply for it and use it to deliver high-quality and sustainable outcomes for wildlife and cost-effective outcomes for taxpayers. The Welsh Government has an excellent opportunity to improve the state of nature – habitats and wildlife – in Wales. To seize this opportunity, it must gain the support and active involvement of the farming and landowning community, which will require the Welsh Government to demonstrate that it both understands and values farming. The opportunity to deliver cost-effective gains for nature in Wales makes the effort very worthwhile.

[238] *The positive impacts of supplementary feeding and wild bird seed mix cover crops on farms in Wales is shown by the results of the Welsh Farmland Bird Initiative/Menter Adar Ffermdir Cymru project reported in March 2023. The density of birds increased by 4.4-fold on a lowland farm and 6.3-fold on an upland farm in winter, and by 1.4-fold on the lowland farm and 1.7-fold on the upland farm during the breeding season. See gwct.org.uk/wales/projects/welsh-farmland-bird-initiative/*

References

Aglionby, J. and Morris, R. (eds) (2015) Better Outcomes on Uplands Commons 2nd Edition foundationforcommonland.org.uk/pilot-phase-better-outcomes-on-upland-commons

Allen, A. and Chapman, D. (2001) Impacts of afforestation on groundwater resources and quality. Hydrogeology Journal, [online] 9(4), pp.390–400.

Alonso, I., Weston, K., Gregg, R. and Morecroft, M. (2012) Carbon storage by habitat: Review of the evidence of the impacts of management decisions and condition of carbon stores and sources. Natural England Research reports, Number NERR04, [online] 17(10), pp.55–59.

Arkle, R.S., Pilliod, D.S. and Welty, J.L. (2012) Pattern and process of prescribed fires influence effectiveness at reducing wildfire severity in dry coniferous forests. Forest Ecology and Management, 276, pp.174-184.

BASC (2024) The Natural Capital Benefits of Shooting basc.org.uk/research/natural-capital/

Baines, D., Fletcher, K.L., Hesford, N., Newborn, D. and Richardson, M. (2023) Lethal predator control on UK moorland is associated with high breeding success of curlew, a globally near-threatened wader. European Journal of Wildlife Research, 69(6): 1-13.

Barber-Lomax A., Battye R., Gibson S., Castellnou M. and Bachfischer M. (2022) Peak District National Park Wildfire Risk Assessment. peakdistrictwildfire.co.uk/

Bell, J., 2014. Eskdalemuir A comparison of forestry and hill farming; productivity and economic impact. Available at: confor.org.uk/media/246147/33_eskdalemuirreportmay2014.pdf

Belson, W. (1981) The Design and Understanding of Survey Questions. Aldershot: Gower.

Biggin, P. (1982) Forestry and bracken. Proceedings of the Royal Society of Edinburgh, Section B: Biological Sciences, 81(1-2), pp.19-27.

Brown, D., et al. (2015) The Eurasian Curlew – the most pressing bird conservation priority in the UK? Brit. Birds 108: 660–668.

Burrascano, S., Chytrý, M., Kuemmerle, T., Giarrizzo, E., Luyssaert, S., Sabatini, F.M. and Blasi, C. (2016) Current European policies are unlikely to jointly foster carbon sequestration and protect biodiversity. Biological Conservation.

Burton, V, Moseley, D, Brown, C, Metzger, M and Bellamy (2018) 'Reviewing the evidence base for the effects of woodland expansion on biodiversity and ecosystem services in the United Kingdom', Forest Ecology and Management, vol. 430, pp. 366-379. doi.org/10.1016/j.foreco.2018.08.003

Cannell, M.G.R., Cruickshank, M.M. and Mobbs, D.C. (1996) Carbon storage and sequestration in the forests of Northern Ireland. Forestry, [online] 69(2).

Colwell, M. (2018) A forestry boom is turning Ireland into an ecological dead zone | Mary Colwell | Opinion | The Guardian. The Guardian. [online] 10 Oct. Available at: theguardian.com/commentisfree/2018/oct/10/trees-ireland-biodiversity-sitka-birds-extinction

Crane, E. (2020) Woodlands for climate and nature: A review of woodland planting and management approaches in the UK for climate change mitigation and biodiversity conservation. report to the RSPB.

Denny, S. (2025) 'Wildlife Warden, Conservation Manager, Fire Fighter, and Educator: The Grouse Moor Gamekeeper in England in the Twenty-First Century', Regional Moorland Groups and National Gamekeepers' Organisation, in print.

Dexter, L. A. (1970) Elite and Specialised Interviewing. Evanston: Northwest University Press.

Douglas, D.J. and Pearce-Higgins, J.W. (2019) Variation in ectoparasitic sheep tick Ixodes ricinus infestation on European Golden Plover chicks Pluvialis apricaria and implications for growth and survival. Bird Study, 66(1), pp.92-102.

Douglas, D.J., Bellamy, P.E., Stephen, L.S., Pearce-Higgins, J.W., Wilson, J.D. and Grant, M.C. (2014) Upland land use predicts population decline in a globally near threatened wader. Journal of Applied Ecology, 51(1), pp.194-203.

Douglas, D.J., Tománková, I., Gullett, P., Dodd, S.G., Brown, D., Clift, M., Russell, N., Warnock, N., Smart, J. and Sanders, S. (2023) Varying response of breeding waders to experimental manipulation of their habitat and predators. Journal for Nature Conservation, 72, p.126353.

Douglas, D.J.T., Groom, J.D. and Scridel, D. (2020) Benefits and costs of native reforestation for breeding songbirds in temperate uplands. Biological Conservation, [online] 244, p.108483.

Douglas, D.J., Brown, D., Cohen, S., Colwell, M., Donaghy, A., Drewitt, A., Finney, K., Franks, S., Heptinstall, D., Hilton, G. and Kelly, S. (2021) Recovering the Eurasian Curlew in the UK and Ireland: progress since 2015 and looking ahead. British Birds, 114(6).

Douglas, D. (2023) The Curlew Trial Management Project, RSPB community.rspb.org.uk/ourwork/b/science/posts/the-curlew-trial-management-project

Douterlungne, D., Thomas, E. and Levy Tacher, S.I. (2013) Fast growing pioneer tree stands as a rapid and effective strategy for bracken elimination in the Neotropics. Journal of Applied Ecology, 50(5), pp.1257-1265.

Ewald, J.A., Potts, G.R., Aebischer, N.J., Moreby, S.J., Wheatley, C.J. and Burrell, R.A. (2024) Fifty years of monitoring changes in the abundance of invertebrates in the cereal ecosystem of the Sussex Downs, England. Insect Conservation and Diversity.

Farm Advisory Service, Scotland, SRUC (2017) Technical Note 686, Conservation Grazing for Semi-Natural Habitats fas.scot/downloads/tn686-conservation-grazing-semi-natural-habitats/

Fisher, G. and Walker, M. (2015) Habitat restoration for curlew Numenius Arquata at the Lake Vyrnwy reserve, Wales, Conservation Evidence, 12 pp. 48-52.

Friggens, N.L., Hester, A.J., Mitchell, R.J., Parker, T.C., Subke, J.A. and Wookey, P.A. (2020) Tree planting in organic soils does not result in net carbon sequestration on decadal timescales. Global Change Biology, [online] 26(9), pp.5178–5188.

Gabriel, D., Sait, S.M., Hodgson, J.A., Schmutz, U., Kunin, W.E. and Benton, T.G. (2010) Scale matters: the impact of organic farming on biodiversity at different spatial scales. Ecology letters, 13(7), pp.858-869.

Game & Wildlife Conservation Trust (2024) Managing for More gwct.org.uk/wildlife/managing-for-more

García-Jorgensen, D.B., Diamantopoulos, E., Kisielius, V. et al (2021) Bracken growth, toxin production and transfer from plant to soil: a 2-year monitoring study. Environ Sci Eur 33, 45 doi.org/10.1186/s12302-021-00484-0.

Garside, R., Orr, N., Short, R., Lovell, B., Husk, K., McEachan, R., Rashid, R., Dickie, I., Preston, S. and Ainsworth, H. (2020) Therapeutic Nature: nature-based social prescribing for diagnosed mental health conditions in the UK. Final Report for Defra.

Goodall, M., Hoodless, A., Evans, S., Grayshon, L. and Perkins, A. (2023) Review of the wider societal, biodiversity and ecosystem benefits of curlew recovery in Wales. NRW Evidence Report Series (No. 629).

Goodall, M. (2023) The Welsh Farmland Bird Initiative/Menter Adar Ffermdir Cymru Final Report businesswales.gov.wales/farmingconnect/sites/farmingconnect/files/documents/EIP%20Wales_Farmland%20Bird%20Initiative%20GWCT_Final%20Report.pdf

Hardaker, A. (2018) Is forestry really more profitable than upland farming? A historic and present day farm level economic comparison of upland sheep farming and forestry in the UK. Land Use Policy, 71, pp.98–120.

Heinemeyer, A. (2023) Protecting our peatlands. A summary of ten years studying moorland management as part of Peatland-ES-UK: heather burning compared to mowing or uncut approaches.

Holden, J. and Burt, T.P. (2003) Hydrological studies on blanket peat: the significance of the acrotelm-catotelm model. Journal of Ecology, pp.86-102.

Huber, G. P. and Power, D. J. (1985) 'Retrospective reports of strategic level managers: Guidelines for increasing their accuracy', Strategic Management Journal. John Wiley & Sons, Ltd, 6(2), pp. 171–180.

Kelly, J., Sadeghieh, T. and Adeli, K. (2014) Peer Review in Scientific Publications: Benefits, Critiques, & A Survival Guide. EJIFCC, 25(3), pp. 227–43. Available at: ncbi.nlm.nih.gov/pubmed/27683470

Kumar, N., Stern, L. W. and Anderson, J. C. (1993) 'Conducting Interorganizational Research Using Key Informants', The Academy of Management Journal, 36, pp. 1633–1651.

Landis, D.A. (2017) Designing agricultural landscapes for biodiversity-based ecosystem services. Basic and Applied Ecology, 18, pp.1-12.

Lewis-Stempel, J. (2016) The Running Hare, Transworld Publishers, London ISBN 9780857523266.

Lomba, A., da Costa, J.F., Ramil-Rego, P. and Corbelle-Rico, E. (2022) Assessing the link between farming systems and biodiversity in agricultural landscapes: Insights from Galicia (Spain). Journal of Environmental Management, 317, p.115335.

Lovegrove, R., Shrubb, M. and Williams, I. (1995) Silent Fields: The Current Status of Farmland Birds in Wales, RSPB.

Ludwig, S.C., Roos, S. and Baines, D. (2019) Responses of breeding waders to restoration of grouse management on a moor in South-West Scotland. Journal of Ornithology, 160(3), pp.789–797.

Ludwig, S.C., Roos, S. and Baines, D. (2020) Fluctuations in field vole abundance indirectly influence red grouse productivity via a shared predator guild. Wildlife Biology.

Makanjuola, A., Lynch, M., Hartfiel, N., Cuthbert, A. and Edwards, R.T. (2023) Prevention of poor physical and mental health through the green social prescribing opening doors to the outdoors programme: a social return on investment analysis. International Journal of Environmental Research and Public Health, 20(12), p.6111.

Måren, I.E., Vandvik, V. and Ekelund, K. (2008) Restoration of bracken-invaded Calluna vulgaris heathlands: effects on vegetation dynamics and non-target species. Biological Conservation, 141(4), pp.1032-1042.

Milligan, A.L., Putwain, P.D., Cox, E.S., Ghorbani, J., Le Duc, M.G. and Marrs, R.H. (2004) Developing an integrated land management strategy for the restoration of moorland vegetation on Molinia caerulea-dominated vegetation for conservation purposes in upland Britain. Biological Conservation, 119(3), pp.371-385.

Montenegro, A., Eby, M., Mu, Q., Mulligan, M., Weaver, A.J., Wiebe, E.C. and Zhao, M. (2009) The net carbon drawdown of small scale afforestation from satellite observations. Global and Planetary Change, 69(4), pp.195–204.

Morgan-Grenville, R. and Norfolk, E. (2024) The Return of the Grey Partridge: Restoring Nature on the South Downs, Profile Books, London ISBN 978 1 80081 906 1.

Moxey, A., Thomson, and Lewis-Reddy, E. (2023) Potential economic effects of the Sustainable Farming Scheme. Phase 4 Universal Actions Modelling Results. A report to Welsh Government under project C280/2019/2020.

Myhill, N. (2022) 'Curlew Hotline' Special Outcomes Request Project (SOR 65).

Newborn, D., Fletcher, K.L., Beeston, R. and Baines, D. (2009) Occurrence of sheep ticks on moorlandwader chicks. Bird Study, 56(3), pp.401-404.

Newey, S., Fielding, D., Miller, D.G., Matthews, K.B. and Thomson, S. (2020) Research to assess socioeconomic and biodiversity impacts of Biodiversity considerations on grouse moors. Part 4. Research to assess socioeconomic and biodiversity impacts of driven grouse moors and to understand the rights of gamekeepers: Report to the S. [online] Available at: <sefari.scot/document/part-4-biodiversity-considerations-on-grouse-moors%0Ai> [Accessed 10 May 2021].

O'Driscoll, C., Ramwell, C., Harhen, B., Morrison, L., Clauson-Kaas, F., Hansen, H.C.B., Campbell, G., Sheahan, J., Misstear, B. and Xiao, L. (2016) Ptaquiloside in Irish bracken ferns and receiving waters, with implications for land managers. Molecules, 21(5), p.543.

Pakeman, R.J. and Fielding, D.A. (2020) A functional assessment of the impact of changing grazing management of upland grassland mosaics. Applied Vegetation Science, 23(4), pp.539-550.

Pakeman, R.J., Le Duc, M.G. and Marrs, R. (2002) A review of current bracken control and associated vegetation strategies in Great Britain. Web Ecology, 3(1), pp.6-11.

Priyadarshana, T.S. et al (2024) Crop and landscape heterogeneity increase biodiversity in agricultural landscapes: A global review and meta-analysis, Ecology Letters DOI:10.1111/ele.14412.

Rees, R.M. & Ribbens, J.C.H. (1995) Relationships between afforestation, water chemistry and fish stocks in an upland catchment in south west Scotland. Water, Air, & Soil Pollution, [online] 85(2), pp.303–308.

Renou-Wilson, F., Moser, G., Fallon, D., Farrell, C.A., Müller, C. and Wilson, D. (2019) Rewetting degraded peatlands for climate and biodiversity benefits: Results from two raised bogs. Ecological Engineering, 127, pp.547-560.

Rieger, F. and Wong-Rieger, D. (1995) 'Model Building in Organizational/Cross-Cultural Research: The Need for Multiple Methods, Indices, and Cultures', in Jackson, T. (ed.) Cross Cultural Management. Oxford: Butterworth-Heinemann, pp. 50–59.

Sansom, A.L. (1999) Upland vegetation management: the impacts of overstocking. Water Science and Technology, 39(12), pp.85-92.

Snyder, H. (2019) Literature review as a research methodology: An overview and guidelines. Journal of Business Research, 104, pp. 333–339. Available online at: sciencedirect.com/science/ article/pii/S0148296319304564.

Stanford, J.K. (1954) A Bewilderment of Birds, Rupert Hart-Davies, London.

Thomson, S., Mc Morran, R., Newey, S., Matthews, K., Fielding, D., Miller, D., Glass, J., Gandossi, G., McMillan, J. and Spencer, M. (2020) Summary report - The socioeconomic and biodiversity impacts of driven grouse moors and the employment rights of gamekeepers. [online] Available at: gov.scot/publications/summary-report-socioeconomic-biodiversity-impacts-driven-grouse-moors-employment-rights-gamekeepers/pages/8/.

Upadhaya, S., Arbuckle, J.G. and Schulte, L.A. (2021) Developing farmer typologies to inform conservation outreach in agricultural landscapes. Land Use Policy, 101(C).

Varvarigos, P., and Lawton, J. H. (1991) Farmers' Perceptions of the Scale of the Bracken Problem on Farms in Less Favoured Areas in England and Wales. Journal of Applied Ecology, 28(3), 988–1003. doi.org/10.2307/2404221

Warren, P., and Baines, D. (2014) Changes in the abundance and distribution of upland breeding birds in the Berwyn Special Protection Area, North Wales 1983 – 2002. Birds in Wales, 11: 32-42.

Whitehead, S.C., Hesford, N.N. and Baines, D.D. (2018) Changes in the abundance of some ground-nesting birds on moorland in South West Scotland. [online] Research Report to Scottish Land & Estates and Scottish Gamekeepers Association. Fordingbridge.

Wilson, D., Donaldson, L.J. and Sepai, O. (1998) Should we be frightened of bracken? A review of the evidence. Journal of Epidemiology & Community Health, 52(12), pp.812-817.

Zhang, F., Sha, M., Wang, G., Li, Z. and Shao, Y. (2017) Urban aerodynamic roughness length mapping using multitemporal SAR data. Advances in Meteorology.

Appendix A

Responses to Llanwddyn Community Council Survey of Residents on the Proposed Sale of the Lake Vyrnwy Estate, 2010

Of the 94 responses to the survey form, 44 provided additional comments which are reproduced verbatim below. There were a few personal comments about individuals which have been excluded. The 44 comments were as follows:

1. The rumour that RSPB may acquire the estate is a recipe for ongoing disaster.

Just look at the mess they have created. Please support the bid from the individual who will promote the longer-term prosperity of Lake Vyrnwy.

2. Existing shops, eating places, etc, guaranteed existing leases, rent etc. Maintain free access and parking.

3. All properties either existing or new should be for local born or local workers.

4. Over the last 10 years or so the estate has become unkept, whereas when the Severn Trent was employing local people to work on the estate, the land forestry and public areas were kept in good repair. Now we feel that the estate has become a wilderness, even the roadways are a disgrace (all the fences are in a poor state of repair, whereas previously they were kept in a good standard). We have read on the internet about a gentleman from Bala who has very positive plans for the estate and we hope very much that he will be supported in this venture.

5. In my opinion, the purchaser or the purchasers of the estate really should have the full backing of the community. For this to happen, we need to be sure the purchaser wants to maintain and perhaps pay more attention to the upkeep of the area but also that nothing is changed as far as the beauty and landscape of the estate goes. I want my children growing up seeing the true beauty of our countryside and everything that lives within it. A property developer would not be ideal; they would have to generate income for their shareholders and for that we would pay many sacrifices!

6. I strongly believe that the RSPB partnership will have a huge detrimental impact on the community and estate. RSPB have only just shown an interest in the community.
   - Where were they when the school was closing?
   - Jobs are family based.
   - What have they actually done for the wildlife?
   - Bird numbers have declined, you only had to watch Spring Watch to see this.
   - Surveys do not run estates; this is all they do. They are a bird protection agency.
   - They are already stating they have no money! What the hell?
   - Do we really need a charity running Vyrnwy?
   - Who would be answerable?

7. The RSPB has done little for the community in 30 years. Tourism is too seasonal to be the backbone of the local economy. We need an owner who will create all year-round work. Without that, as it is too far for lower paid people to commute, the housing association will only be able to fill the houses with layabouts.

8. Local employment should mean local people…

9. I hope that whoever buys the estate will manage it better than Severn Trent and RSPB have done in the past.

10. Please keep RSPB out - they are a self-centred organisation and care little for the community.

11. What benefits have RSPB bought to the local community?

12. This sounds like more urbanisation of an already popular beautiful area -drawing in more people = more houses, pavements, street lights – creation of better, busier road access? Of course, a bus service would be then provided, but I doubt young people and families would want to settle here without a school – sorry! This does not seem a good partnership for the area.

13. Make sure that the shop is safe with affordable rent.

14. The RSPB is useless to all but a few.

15. I strongly feel that an independent buyer would benefit the local people of Llanwddyn, with a good estate manager something that has not happened when in the hands of the RSPB… no local people are employed which is very sad! I also disagree with Mid Wales Housing taking over many of the properties, what will "Llanwddyn" benefit from this takeover. Will they be filled by BENEFIT cheats and no interest in working. We don't need this in "LLANWDDYN".

16. I believe that Llanwddyn would benefit the most from brand new management with fresh faces. Obviously, the best possible outcome for the local community is paramount, but I think the RSPB have upset far too many locals and made too many mistakes to make the new proposed partnership work. Employment should have been offered to the people of Llanwddyn a long time ago! In my opinion there is sufficient housing in the village that just needs to be maintained. As for the issue of affordable housing in the area I think that is a problem throughout the country not just in Llanwddyn, what we don't want is to be turned into one big council estate.

17. Firstly I would like to respond to the RSPB/Mid Wales Housing article in the November newsletter; emphasis seemed to have been put on how Llanwddyn and "nearby villages" will benefit. It's the Vyrnwy Estate that is up for sale therefore other villages should not have been mentioned and should not benefit from the sale. I strongly agree that whoever wins the bid should be a new face. RSPB first made their appearance 30 years ago and personally I have seen no positive impact towards the people of Llanwddyn. As for Mid Wales Housing I have heard many negative stories from other villages which I do not wish to see happening in Llanwddyn.

18. It would be the final nail in the coffin, if the RSPB take over. Need new owner, and a good, honest estate manager put in place. The things that go on here now is disgraceful. Don't think STW know half what goes on especially on the farm. All the RSPB do is mislead the public. Us locals know full well what's going on here; Tim Wright from STW knew what was going on here he was told on many occasions by STW workers…

19. This estate needs change, this estate needs investment, this estate needs to have a master who can make decisions and act on them. This estate needs an owner with a heart and soul. It needs to be put back on its feet by someone who cares about the countryside without political agendas and corporate masters.

20. I would like to see Llanwddyn run by brand new management a new start for Llanwddyn and the people. Not the RSPB and the Mid Wales Housing. I strongly believe this.

21. Not RSPB and Mid Wales Housing. Sale should have new management of estate. Investment needed not people who rely on charity. What is the place like now, being run down? Sheep wild in the woods not shorn. The dam is in a state, it's got grass verges now! Farm properly! Manage woodlands! RSPB just on a free trip, they don't own it! What have they given for the area, answer nothing!

22. If Severn Trent have any remorse for what they have destroyed in the Llanwddyn area, they should at least make sure the sale of the estate, goes into the right hands. I think they owe us that. As we have nothing left. The vultures are running it now, for both their own needs. It would be a blessing if RSPB… were not involved in the future, so we can have a future. It needs investment, so the village can try and get back on its feet, to be a thriving concern, local people care so need to be involved (as in employed).

23. The new owner should be someone who can provide inward investment to reverse the asset stripping that has taken place over the last 30 odd years. And put greater emphasis on human habitat as opposed to wildlife habitat which has bought the community to its knees. PS I do hope this survey is listened to and not just a paper exercise as I suspect it is.

24. Severn Trent have shown that they have not been able to cope with managing the estate efficiently and for this reason I would very much like the local Bala businessman to take over the estate as he will have a better knowledge of what the land and residents need and requirements are. One landlord and manager would be much better than a shared concern.

25. Lake Vyrnwy having been neglected by STW for so long needs money to re-generate and improve. If RSPB buy the lease will they have the money to invest, haven't in the past, so the area wouldn't benefit.

26. I believe that the new owner should be Rhys Jones, Bala - not interested in RSPB or Housing Trust or we will be in the same mess again.

27. RSPB… is the worst thing that came to the area! Work needs to be created fast before they destroy the area anymore!

28. It has been many years since the estate was actually cared for. The whole estate needs attention. It would be good to see the estate farmed and working to the full potential as in the old days (employing local people). We have read that there is a local Bala businessman interested in purchasing the estate. This we believe would bring more prosperity to the area and benefit all concerned.

29. I believe the way to go forward would be to have a complete new ownership for the estate; there needs to be new and fresh management who will prioritise in meeting the needs of the village of Llanwddyn. Whoever ends up purchasing the estate will need to have a good rapport with the local community and this is one of the worries that I have over the RSPB/Mid Wales Housing bid. Do they really know what the community wants?

30. Tourism and holiday accommodation are the obvious "easy hits" for enhancing the economic activity of Lake Vyrnwy. However, we hope the purchaser will recognise that excessive tourist activity could adversely affect the quality of life of those residents already living here and who have other employment, or those who are retired. The paradox of Lake Vyrnwy is that it is beautiful, remote and not (yet) overrun with tourists!

31. The sale of the estate should not just be about who can afford the purchase, but who will maintain and invest in the estate, businesses and community. They should play an active role in working with local businesses in order to promote the area and all it has to offer.

32. Sale should have new management of estate. Investment needed not people who rely on charity. It makes you think what Llanwddyn is like now run down. I would not like the RSPB to run Lake Vyrnwy.

33. No to RSPB, got to be a new owner.

34. Management is a concern meaning running one's own farm, then being a manager of the estate surrounding it. It's like having a builder's firm, then being the manager of B&Q, at the same time! RSPB are not farmers and bring in no jobs. Birds were here before them, and will be here after them. Need the place run as a going concern, not stupid schemes run by volunteers. Mid Wales housing would only bring in the overspill from other places ie. dole scroungers, one parent families, troublemakers! Work needs to be created for local people. Place is a mess, ditches are full. The forestry-trees need to be thinned, rubbish everywhere, roads closed in. Plenty of work around. Need to be done!

35. The estate should be sold to an outsider. The RSPB have done nothing for the estate only looked after themselves… spending money on blanket bogs all rubbish. And cutting heather with tractors only to put money in their own pockets, after all that how many grouse can you see on the moors (none). The forestry roads are a disgrace all closed in carrying manure on the roads, but never cleaning up afterwards (out with the RSPB).

36. I would hope that all existing businesses will be allowed to continue trade as before. Leases and rent terms to remain same through changeover and for a reasonable period afterwards.

37. I believe that the worst thing that happened to Lake Vyrnwy was the RSPB… Years ago there were approx 13,000 sheep on the estate and they were well looked after by the shepherds, but today there are dead sheep to be seen everywhere, in old buildings around the lake eg. Gadfa - Rhiwargor, sheep going into old houses, doors closing behind them and they are left to die, that is not good shepherding…

38. Hopefully the RSPB is not successful in their bid. They have been here at Llanwddyn for 30 years (approx) and have not really done anything positive for the community in the eyes of the locals. And it is hard to see where and how they can alter this now. They do not maintain grounds, etc, around their own properties very well, so it is hard to see how they can maintain the whole estate. In our view as a family, it would be good to see someone buy the estate, for

the good of the community as well as the “estate”. RSPB say they would have to buy in with partners, etc, so would they really have the finances available in this economic climate to run the estate viably day to day. Thank you for the opportunity to comment.

39. Low cost homes would bring the wrong type of families to Lake Vyrnwy - don’t ruin our community. The housing developers aren’t bothered about the kind of people who buy their houses. Great if RSPB take over half the estate, but would prefer it if Mid Wales Housing did not buy the other half.

40. Don’t let the RSPB take over and bring in more volunteers to work on the estate.

41. I believe the new owner should be Mr Rhys Jones, Bala. We don’t want the Mid Wales Housing Association; they are no good for Llanwddyn people, we don’t want the RSPB the estate is in a terrible state now of them, there is a mess everywhere and the state of the dam is terrible.

42. RSPB had the chance to get it right for the locals, but it’s always the public first that’s all that matters to them because they live off handouts from charity concern. Lake Vyrnwy beauty has always been here, before RSPB set foot in the place; don’t change the beauty just change the management.

43. What an interesting meeting. Very good idea to have a survey. How are the RSPB going to run the estate for 125 years? All on volunteer labour, it could be a big mess. It just goes to show how little Mr Rose knows what happens on the reserve in Llanwddyn, or how unpopular the farm manager and other members of staff actually are. The stock numbers were reduced to encourage heather growth, but now the mountains are overgrown. Did anyone know what they were doing then? Maybe it was as much the fault of STW as anyone else. If there was to be a clean sweep of staff possibly things may improve. Mr Perkins was very realistic, rents would rise, hopefully improve housing standards and find the right type of people to fit into the community. Without much employment it is difficult to see who, realistically, would want to live in Llanwddyn.

44. With regard to the survey being carried out by the Llanwddyn Community Council, much concern has been expressed about the future of the area. I feel that at the moment it is very difficult to express a preference to whom we would like to be the new owner of the estate, as yet only two organisations have been open enough to declare their interest. If all the interested parties would come forward with either a public statement or an appearance and declare their plans and intentions for the area it would be possible to inform an opinion.

With RSPB Cymru. Maybe the organisation itself is not as unpopular as the staff they have running the estate. A possible change could be to employ a new farm manager... This could lead to fewer animals being left around the fields after they have died, or in need of treatment for foot rot, etc. Are the hierarchy of RSPB aware of the desperate need of the attention to detail that is needed on a farm of this scale?

Mid Wales Housing have put their intentions fairly clearly on the table stating what they will and will not be doing, including putting the rents up.

It would be very interesting to see the manifestos of all the other interested parties.

8 November 2010