Y Pwyllgor Newid Hinsawdd, Amgylchedd a Materion Gwledig | Climate Change, Environment and Rural Affairs Committee
Ymchwiliad Bioamrywiaeth | Biodiversity Inquiry
Ymateb gan : Cyfoeth Naturiol Cymru
Evidence from : Natural Resources Wales

## Response from Natural Resources Wales to the Climate Change, Environment and Rural Affairs Committee (CCERA) inquiry into Biodiversity – proposed Public Goods Scheme outlined in the consultation Brexit and Our Land

1. We welcome the opportunity to contribute evidence to the Committee's inquiry into biodiversity and public goods. Natural Resources Wales' core purpose is to pursue Sustainable Management of Natural Resources (SMNR). As part of that purpose, one of our roles is the statutory adviser to Government on biodiversity and resilience of ecosystems. Our response to this inquiry builds upon our response to the "Brexit and Our Land" consultation.

### Key Recommendations

- Place ecosystem resilience at the core of the scheme.
- Develop a flexible and adaptive approach.
- Promote biodiversity recovery by delivering resilient ecosystems at a landscape-scale.
- Deliver tailor-made options for species heading towards extinction in Wales.
- Safeguard species and habitats of principle importance to ensure healthy and resilient ecosystem resilience.
- Ensure that land managers are supported in developing business planning which integrates economic and ecological resilience.
- Ensure continuity of support for biodiversity through the transition period.
- Develop a scheme around a clear regulatory floor and sector standards above which payments can be made for additional public goods.
- Incentivise and facilitate collaboration between land managers based on good evidence including the Area Statements.
- Facilitate collaboration between land managers.
- Develop and support a properly funded structure which supports integrated high-quality training, advice and guidance and other services to land managers across business and public good outcomes at an appropriate scale.
- Ensure ERAMMP will provide important data on general trends and allow wider environmental modelling.
- Support additional monitoring to adequately report on rarer habitats and species.

2. Biodiversity is an essential natural resource as it underpins the structure, functioning and resilience of our ecosystems and has wider economic, social and cultural significance. The relationship between natural resources and land-use is fundamental to their sustainable management. The scheme needs to recognise the right things as public goods and this includes all the factors which contribute to healthy and resilient ecosystems.

3. Like much of the rest of Europe, Wales continues to face biodiversity loss. According to the 2016 *State of Nature: Wales* report, of the animal and plant species identified as conservation priorities in Wales, 33% of the species assessed have declined over the past decade, with between a third and a half of the remainder showing no significant improvement. NRW's *State of Natural Resources Report* (SoNaRR) includes assessments of the condition of our Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), the sites subject to the highest level of statutory protection. On Wales' terrestrial and freshwater SACs and SPAs, 55% of species and 75% of habitats are assessed as being in unfavourable condition.

4. Increasing ecosystem resilience will provide significant benefits to other services delivered by natural resources. For example, restoration of wet grassland increases soil water retention to ameliorate flooding or drought, increases soil carbon sequestration and reduces sedimentation and fertilizer run-off to improve water quality in adjacent watercourses.

5. Over the last half century, intensification of agriculture has been the one of the biggest drivers of biodiversity decline across the UK[1]. Effective land management schemes are critical to reversing this biodiversity loss. Reflecting on three decades of experience with the design and implementation of agri-environment and woodland grant schemes, there have been mixed results from previous schemes in relation to biodiversity. The condition of some habitats has been maintained or improved and some species populations have stabilised whilst other habitats and species are still declining.

6. The variation in success is partly the result of uptake. GMEP reported[2] that the condition of Purple Moor Grass and Rush Pasture is improving; 37% of this habitat of principal importance was within Glastir Schemes in 2018. Whereas, the most suitable option for rare arable plant communities (a Critically Endangered, Red List European Habitat in steep decline) covered only 0.08% of arable land in 2018[3].

7. Initial data analysis by NRW shows that over half of the surface area of terrestrial statutory protected sites is currently managed under the Glastir schemes. In some cases, these agreements are delivering appropriate management that is maintaining or restoring the condition of these protected sites. In other cases, the lack of option flexibility under the existing schemes has resulted in sub-optimal management.

[1] Burns F, Eaton MA, Barlow KE, Beckmann BC, Brereton T, Brooks DR, et al. (2016) Agricultural Management and Climatic Change are the Major Drivers of Biodiversity Change in the UK. PLoS ONE 11(3).

[2] Glastir Monitoring & Evaluation Programme. Final Report. Emmett B.E. and GMEP team, 2017.

[3] Glastir uptake figures from Welsh Government, 2018.

## Part one

**How could the Welsh Government's proposed Public Goods scheme, set out in Brexit and Our Land, be applied to restore biodiversity?**

8. The establishment of the contributory principle ("something for something") as part of the "Brexit and Our Land" consultation is an important milestone and provides the opportunity to significantly increase action to halt and reverse current declines in biodiversity. Building ecosystem resilience should be at the core of the proposed schemes if the Welsh Government is to achieve a resilient Wales that maintains and enhances a biodiverse, natural environment.

9. "Brexit and Our Land" provides us with an opportunity to change the perception that delivering for the environment and providing public goods, including biodiversity, is contrary to productive agricultural and forestry systems and as such should be treated as a side-line to a land-based industry. Embedding ecosystem resilience into land-use businesses and recognising that economic resilience of these businesses is significantly underpinned by their ecological resilience is fundamental to long term success and delivery at a Welsh scale.

10. The "Brexit and Our Land" consultation presents regulation, economic resilience and public goods as three separate strands. NRW believes that there are significant gains and benefits, across all-natural resources and especially for biodiversity, if the three delivery mechanisms are integrated, and delivered in a holistic manner.

11. The development of a hierarchy of performance strands that link to the public goods schemes could include the following -

    a) A 'universal regulatory floor' that underpins the Public Goods schemes to act as the minimum standard applied to all land managers that will deliver a basic level of public goods including biodiversity (regulation).
    b) A good practice standard above the regulatory floor to help unlock market access (linking to economic resilience schemes) or to provide assurance of environmental performance including a level of requirements in relation to biodiversity.
    c) The Public Goods schemes would deliver the highest level of standards and provide assurances of sustainable management of natural resources and include high value public goods.

    Throughout our remaining evidence the use of scheme or schemes refers to the combination of economic resilience, public goods and regulation.

12. Delivery at a landscape scale is essential to promote ecosystem resilience. The attributes of ecosystem resilience set out in the Environment Act provide a framework for exploring potential interventions to maintain, enhance or restore biodiversity. Considering each of these in turn with respect to biodiversity within the proposed schemes -

13. **Diversity.** Maintaining and enhancing native biodiversity is central to building ecosystem resilience. Whilst the requirements of rare and localised habitats and species may sometimes be catered for within existing special sites, diversity in a wider sense is fundamental for biodiversity and resilience, for example in increasing structural diversity across landscapes through varied (appropriate) management practices, and diversification of productive systems to increase the representation of native or other suitable species e.g. within swards of improved grassland, conifer plantations. Increasing diversity across landscapes, getting the right thing in the right place, is key to restoring biodiversity and building resilience.

14. **Extent.** Extending the area of habitats through restoration and creation is fundamental for restoring biodiversity and building resilience and appears well accepted within the proposed schemes.

15. **Condition**. A very wide range of activities may improve condition and hence benefit biodiversity and resilience, often in relation to applying more extensive sensitive management and control of pressures such as pollution and Invasive Non-native Species (INNS). With respect to resilience, condition relates to achieving sustainable balances of inputs and outputs, for example of fertilisers or timber. An integrated scheme is ideally placed to deliver this.

16. **Connectivity** relates to movement within and between ecosystems, for example of species or natural processes. Connectivity may be improved through a wide range of activities that may be promoted by the Public Goods scheme. For example, habitat restoration and creation, improvements or maintenance of connective features such as hedges, water courses and field margins.

17. Many of these interventions can be brought together within the concept of a **Resilient Ecological Network**. This is a relatively new term, introduced as a national priority within WG's Natural Resources Policy (2017).

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| Resilient Ecological Networks have been defined in discussions between NRW and WG as a series of biodiversity hotspots (often represented by protected sites) that are functionally connected, meaning that species are able to move within and between them as required by all stages of their life cycles. This allows shifts in range as adaptation to climate change; as such the networks become more resilient in themselves and help confer ecosystem resilience and enhanced goods and services to the wider landscape. Such networks would be developed by targeted interventions as described above, e.g. diversification, improvements in condition and connectivity. |

18. The proposed schemes should support and incentivise the development of Resilient Ecological Networks with the requirement of landscape scale interventions Evidence from both experts (for example, studies of species requirements and NRW habitat connectivity mapping) and local knowledge should be used to target and prioritise interventions. We expect the Areas Statements to be used in support of decision around public good payments.

19. Common Land covers about 8% of Wales and there is high correlation between statutory sites and common land. Targeting collaborative action on common land would help to address multi-ecosystem services including biodiversity over landscape-scale areas of Wales.

20. Recovery of many species will be enabled through appropriate habitat management and consideration of specific conservation need. Most of the examples of species recovery achieved by agri-environment schemes depend upon tailored options. We also know that clear advice and guidance is welcomed by land owners. Consideration should be given to including such components in the schemes for species heading towards extinction in Wales (e.g. marsh fritillary butterfly, lapwing and rare arable plants).

21. There are currently mechanisms within Glastir to prevent unintended damage to habitats and species from the selection of inappropriate options. We would expect to see the future scheme continuing to provide mechanisms to safeguard Section 7 habitats and species of principle importance against inappropriate action.

22. We would also like to explore with land owners all the potential tools to support delivery of public goods, including species reintroductions.

23. The need to deliver a high number of agreements in a short space of time should not drive the level of ambition of scheme outcomes nor the type of scheme developed. It is also important that the transition period is sufficiently long to allow for evidence gaps to be addressed through pilots and trials, for administration capacity to be built up, staff to be trained, for advice and guidance capacity to be developed, and to support land managers to adapt.

24. For a scheme to be successful, it should have sufficient detail and flexibility to cope with the variety and complexity of ecosystems present in Wales. This will take time to develop and trial. To that end, trials and pilots developed through the transition period should focus on the delivery of an initial tranche of core public goods. This time should be used to learn and evaluate. Some outcomes are straight forward to achieve and some are more challenging. It will be important to trial options with varying degrees of complexity and difficulty during any pilot process.

25. If a new scheme cannot be delivered in its entirety by the end of the transition period, it is critically important not to create a gap in protection and management for existing habitats that are either in good condition or improving under existing schemes. The financial pressures on land managers post-Brexit could risk creating incentives for degradation of such habitats. This would be detrimental to biodiversity goals and would also represent a significant waste of public investment. Welsh Government has introduced an intermediary solution by offering contract holders extensions to 2021. If necessary, existing prescriptive agreements should be rolled on further than the current 2021 timeframe to allow time for new contracts to be negotiated.

26. The existing protected sites network is heavily reliant on current agri-environment schemes to promote appropriate management. Should there be a gap in delivery of funding to land managers, there is a strong risk that site condition will be compromised contrary to national and international obligations.

27. A gap in the provision of land management funding for statutory protected sites would almost certainly place increased pressure on NRW's staff and financial resource
available for land management agreements under the Environment (Wales) Act, and a greater pressure on our potential enforcement activities.

28. Within Europe, research evidence shows that there are several key factors that are common to successful schemes[4].These should be given sufficient consideration when designing the Public Goods scheme for Wales.

    Successful schemes:
    - have been specific to a region and carefully adapted to the local farming practices and environmental conditions;
    - have a considerable element of landowner training;
    - are well resourced with knowledgeable project officers who offer good landowner support and can monitor outcomes;
    - provide facilitation for development of cooperation; and • have pilot periods to fine tune targets and payment rates.

29. 'Payment for results' models are typically far more successful at achieving the desired outcomes than prescriptive schemes but they are often more complex, have incremental payments and use high levels of support, training and monitoring. Such detailed approaches should be considered for the more complex or technically demanding elements. More technically challenging schemes could be gradually rolled out across geographic regions, allowing Welsh Government, land managers and delivery partners to develop experience and understanding and to work in an adaptive and iterative manner as required by the Environment (Wales) Act.

30. Managing land for biodiversity and other public goods can be complicated and land managers who have access to expertise do better than those who do not[5,6]. For the schemes to be successful it is essential that advice and guidance, training and support for the development of experience are available as an integral part of the scheme. These should also be in place and widely available before the scheme is launched to encourage uptake. It is essential that this aspect of the scheme is adequately resourced, both financially and in terms of skill-base. It should also

[4] Keenleyside C, Radley G, Tucker G, Underwood E, Hart K, Allen B and Menadue H (2014) Results-based Payments for Biodiversity Guidance Handbook: Designing and implementing results-based agri-environment schemes 2014-20. Prepared for the European Commission, DG Environment, Contract No ENV.B.2/ETU/2013/0046, Institute for European Environmental Policy, London.

[5] Department for Environment, Food & Rural Affairs. (2013). Review of Environmental Advice, Incentives and Partnership Approaches for the Farming Sector in England.

[6] Boatman, N., Short, C., Elliot, J., Gaskell, P., Hallam, C., Laybourn, R. & Jones, N. (2015). Agreement scale monitoring of Environmental Stewardship 2013-4: assessing the impact of advice and support on the environmental outcomes of HLS agreements.

acknowledge that specialist support will be required to deliver some management, e.g. recovery of certain species. The Welsh Government should collaborate with NGOs and NRW to source such expertise.

31. Agreements should be based on assessments at an appropriate scale. This allows for an expert assessment of opportunities and options based on knowledge of both the local environment and the land-use business.

32. The promotion of collaboration between land managers will be fundamental to achieving resilient ecological networks. This will require facilitation to promote collaborative uptake. There are several delivery models that have already been used to this end. Learning the lessons from all of these is vital in moving forward. These include trusted facilitators (agri-sgop), technical expert facilitators (LIFE), independent facilitators (Sustainable Management Scheme and Common Development Officers[7]), as well as bringing together land based industries with the same issues (Farm Clusters and management groups, e.g. Dartmoor Farming Futures, Pontbren Farmers).

33. The two criteria needed to satisfy "additionality" in "Brexit and Our Land" need to be considered further to allow elements that require deliberate non-intervention to be eligible for payments. Options such as woodland natural regeneration can provide multiple public goods, including a significant benefit to biodiversity and carbon sequestration. Under the current criteria, excluding livestock may not be considered appropriate management.

34. Enhanced payments should be provided for measures that provide multiple benefits and/or support landscape scale opportunities, e.g. native broadleaved woodland creation that is in a location where it could intercept flood water and increase woodland connectivity, should attract higher payment rates than woodland creation in isolation. In this way, well-designed scheme payments could encourage land managers to target their actions to achieve the greatest multiple benefits.

35. There would be significant advantages from integrating any woodland creation element with other aspects of land management. An integrated scheme would encourage woodlands to be considered as part of the whole farm agreement, as well as management of open space as part of a woodland agreement. This would increase the likelihood of establishing new woodlands in appropriate locations and Section 7 habitats included within proposed woodland creation areas could be maintained as open habitat.

36. Invasive non-native species (INNS) pose a significant threat to ecosystem resilience in Wales through impacts such as displacement of native species, habitat loss and change of community structure. Including INNS management within the public goods scheme could contribute significantly to addressing INNS as it would enable widely spread INNS to be tackled at appropriate spatial scales (i.e. catchment level) and could also be used to deal with INNS at an early stage of infestation to prevent

[7] http://www.ccri.ac.uk/glastir/

them from spreading and taking hold in the first instance, thereby reducing the impact and economic burden of control.

37. Both development and delivery of an effective scheme will be complex and technically challenging. An objective assessment needs to be undertaken that focuses on opportunities and options for delivery models which will best achieve the joint outcomes that NRW, Welsh Government and others in Wales seek. To ensure success, it is critically important that personnel with the appropriate skills and experience are involved at all stages of development and delivery. Sourcing these skills will require collaboration with NRW, NGOs and others. Given its expertise, NRW should have a core role.

## Part two

### How could the various existing Welsh Government policies and legislation for biodiversity restoration be applied in the design and implementation of the proposed Public Goods scheme?

38. Brexit and our land does not only provide an opportunity to redesign payment systems to enhance the wider benefits land brings to Wales and support the delivery of our unique legislative framework, it also provides the opportunity to assess how these support systems are undertaken and delivered. Once the constraints of the EU regulations are removed, the current wording of the UK Agricultural Bill with the Environment Act (Wales) 2016 allows Wales to determine the most appropriate delivery model for our unique legislative framework.

39. The following briefly reviews the range of relevant WG policies and legislation and reflects on how they may relate to schemes developed as part of "Brexit and Our Land", and especially to the delivery the interventions described in Part 1.

40. Welsh Government has set out its commitments for biodiversity in the Nature Recovery Action Plan for Wales (NRAP). This recognises that a key requirement of SMNR is to ensure that, through the underpinning principle of resilient ecosystems, Wales can continue to deliver its key UK, European and international obligations for biodiversity.

41. The objectives of the future scheme need to fit within high level policy contexts. Wales is committed to the vision of the Convention on Biological Diversity's (CBD) Strategic Plan for Biodiversity 2011-2020: 'By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people', with its mission to take urgent action to halt the loss of biodiversity'.

42. The Well-being of Future Generations Act recognises the importance that the Welsh Government places on ecosystems and therefore, nature and its biodiversity, primarily through the 'Resilient Wales' goal. Biodiversity can contribute to the six other goals that make linkages from a biodiverse natural environment to social and economic benefits.

43. The Environment (Wales) Act (2016), Part 1, is of particular relevance. It recognises the essential contribution biodiversity makes to the sustainable management of natural resources and to our well-being by putting in place the Section 6 duty that requires public authorities to seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in so doing promote the resilience of ecosystems. This key duty should also be reflected in the design and implementation of any public goods scheme and, as has been described in Part 1.

44. The list of habitats and species of principle importance set out in Section 7 of the Environment Act provide a useful basis for outcomes within the proposed scheme and we recommend that this list is closely aligned to its development. The scheme should seek to deliver actions to maintain and restore all relevant Section 7 habitats and species.

45. This sits alongside existing legislation designed to protect our most threatened species and habitats (Wildlife and Countryside Act 1981, Countryside and Rights of Way Act 2000 and EC Habitats and Birds Directives). Statutory sites, designated under this legislation represent a critically important biodiversity reservoir. This importance has been recognised by weighting within Glastir. The proposed scheme should continue to prioritise protected sites and build upon them to create Resilient Ecological Networks.

46. The Natural Resources Policy contains three high level priorities: nature-based solutions, resource efficiency and place-based working. We have set out our thoughts on how a focus on building Resilient Ecological Networks can enable the scheme to deliver for biodiversity through these in Part 1. We have mentioned the resource efficiency elements in relation to measures supporting economic resilience in our response to "Brexit and Our Land". We reflect further on place-based working below.

47. The third element of the SMNR framework is Area Statements. Area Statements have the potential to be an evidence base in the development and delivery of a more innovative and flexible schemes. They will provide spatial information to support the identification of opportunities for delivering ecosystem services, and resilient ecological networks. The collaborative way in which Area Statements are being developed offers the opportunity to build and connect with local networks, gather additional information that may be specific to a locality, contribute to the development of potential supply chains and share sources of good practice in relation to sustainable management of natural resources. All of these will be important in supporting collaborative uptake and targeting other forms of investment and income for land managers (for example, tourism).

48. Whilst Area Statements are new and under development, they offer a major opportunity to be part of the architecture of land management in Wales. Any trials or pilots to develop the scheme should address the question of how Area Statements can provide evidence, advice, support and facilitation to enable the delivery of the proposed scheme.

49. We are committed to working with Welsh Government to explore how this can be done in a way that drives outcomes for biodiversity and other public goods, whilst facilitating place-based, innovative and flexible approaches required to get the best outcomes for Wales.

50. There are many policies and plans which have commitments where the expectation of delivery is placed on the public goods scheme. For example, Welsh Government's Woodlands for Wales Strategy (2018) contains many commitments and statements about desired outcomes that are relevant to biodiversity and the scope of a future Public Goods scheme. In relation to biodiversity, it contains commitments to prioritise native woodland species when restoring planted woodland on ancient woodland sites, the need to manage the negative impact of pests and diseases, and the need for strategic approaches for dealing with the impacts of INNS in woodland. Analysis of these expectations should be undertaken when defining the outcomes of the schemes.

51. UK Forestry Standard (UKFS) is the reference standard for sustainable forest management in the UK and provides a model for the development of other land use standards. It sets out the approach of the UK governments to sustainable forest management, defining standards to ensure regulatory compliance and good practice. It is relevant to all public, private and third sector managed forests and woodlands. There is nothing similar for other land use types in Wales but if there were, these could be linked to the delivery of the proposed schemes. There are specific biodiversity guidelines within the UKFS which could inform the design and implementation of a proposed Public Goods scheme relevant to all land use types in Wales, for example:

    - Manage a minimum of 15% of the forest management unit with conservation and the enhancement of biodiversity as a major objective.
    - Ensure wetland features such as springs, flushes and bogs are protected.

## Part three

### What lessons can be learned from the Glastir Monitoring and Evaluation Programme (GMEP) to ensure effective monitoring and evaluation of schemes to support the restoration of biodiversity?

52. It is important to acknowledge that GMEP had a much wider remit than just biodiversity reporting, and so necessarily had to focus on selected aspects rather than giving a comprehensive picture across all biodiversity. However, it did provide information across a range of habitats and species, which (if monitoring is repeated) are likely to allow general signals of biodiversity change to be detected. It is worth noting that GMEP included recording of soil biodiversity, a very important but generally under-recorded aspect of biodiversity.

53. The field-sampling strategy, using a landscape-based stratified sample of 1km squares, will have influenced the evidence gathered on biodiversity, as more sampling was undertaken of common land-uses and habitats than of rarer habitats and associated species. The real power of this approach is the potential for repeat sampling of biodiversity within a consistent sample, allowing changes to demonstrated with statistical confidence.

54. Changes in biodiversity may occur (or only become detectable) over long time periods. GMEP recognised this, and much of the information recorded is considered to be a baseline to allow changes to be detected in future monitoring events (as well as providing continuity with historic monitoring programmes). Coupled to this is the use of modelling to help understand these long-term processes and responses of biodiversity to environmental change. This appreciation of the time-scales involved in ecological processes, the vital importance of maintaining consistent long-term monitoring, and the value of targeted modelling are key messages to take from GMEP.

**How should the new Environment and Rural Affairs Monitoring and Modelling Programme (ERAMMP) be designed and implemented effectively for this purpose?**

55. ERAMMP should provide evidence that will support Sustainable Management of Natural Resources (SMNR), in particular as a key source of evidence for the State of Natural Resources Report (SoNaRR). It is anticipated that ERAMMP will also contribute to a broader range of domestic and international reporting requirements relating to the environment, biodiversity, and natural resources.

56. Recognising the above, we would like to see the design and subsequent delivery of ERAMMP aligned with the reporting framework for SMNR developed by WG and NRW, which is based around the sequential flow of evidence between SoNaRR, the NRP and Area Statements. NRW are also developing a suite of four key measures for reporting the success of SMNR and we expect these also to align with, and to use evidence collected by ERAMMP.

57. On the question of designing and implementing ERAMMP for biodiversity reporting, we would note that for the large part the field-survey element is now agreed and constrained by reductions in budget. We recognise that (as GMEP before), the programme will collect selective but nonetheless important data on biodiversity that should demonstrate general trends in status and, through modelling, relate these trends to wider environmental and societal factors. As such, ERAMMP has the potential to provide valuable information on the long-term dynamics of some elements of biodiversity, ecosystem resilience, and the success of aspects of SMNR. Continuity is critical, and we strongly support the consistent re-survey of representative samples from GMEP.

58. Welsh Government should be careful not to use the same modelled data from ERAMMP both to target interventions and to monitor outcomes. Monitoring must remain separate from delivery to provide meaningful results.

59. ERAMMP, as currently proposed, will not provide the detailed evidence on the status of many habitats and species required to inform continuous scheme development and reporting for either the proposed scheme or SoNaRR. Additional samples in less common habitats that would otherwise be under-recorded by the current sampling strategy could reduce this issue.

60. Schemes that pay by outcome use the presence of appropriately managed habitat as a proxy for species presence. The species themselves cannot be used as an outcome as this would be unfair to the landowner; there is no guarantee on an individual farm basis that species will colonise or remain. The success of a scheme, however, must be monitoring to record the actual species population levels. ERAMMP currently contains too little species monitoring to report on the effectiveness of the proposed scheme for the recovery of species.

61. In terms of the wider reporting of ecosystem resilience, we would also note that Wales-wide indicators such as ecosystem extent and distribution, and derived measures such as connectivity, could be better obtained from remote sensing techniques than from sample field surveys. Remote sensing provides complete geographical coverage, resolving the issue of limited sample squares for some measures. Although it is unlikely that remote sensing will ever be sufficiently accurate to deliver reliable information for all measures. We would therefore urge collaboration between ERAMMP and initiatives such as the Living Wales Project, to develop integrated methods that could be employed by the proposed scheme.

62. Finally, additional qualitative monitoring and evaluation will be required to better understand the cultural and behavioural implications of moving to the new scheme. For example, understanding land manager's perspectives on the role and value of biodiversity in relation to their business will provide valuable insight to support and inform future cultural and behavioural change.

(18/01/19)