Y Pwyllgor Newid Hinsawdd, Amgylchedd a Materion Gwledig | Climate Change, Environment and Rural Affairs Committee
Ymchwiliad Bioamrywiaeth | Biodiversity Inquiry
Ymateb gan : Cymdeithas Ecolegol Prydain
Evidence from : British Ecological Society

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Founded in 1913, we are the world's oldest ecological society, with over 6,000 members worldwide. As the voice of the UK's ecological community, we communicate the value of ecological knowledge to policymakers and promote evidence-informed solutions.

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

1.1 It is important to protect rare species and to preserve ecosystem function

Biodiversity is a broad term and includes multiple variables at different scales including: genetic, individual species, population and ecosystem variables[1]. Ecosystem functions are a product of the communities of species and habitats that reside within the system, with greater biodiversity improving ecosystem productivity and resilience[2]. A functioning ecosystem will in turn provide services to humans, including pollination, soil formation and ecotourism, all of which have tangible value[3]. The proposed Public Goods Scheme (PGS) suggests that, through appropriate management, Welsh land can significantly contribute to various ecosystem services. However, the delivery of such services will ultimately depend on farmers and land managers being incentivised to promote biodiversity conservation, thus supporting the maintenance and resilience of ecosystem services[4,5]. Hence, we welcome the public goods approach.

Although not all encompassing[6], species abundance and distribution are intuitive metrics of biodiversity change, both readily available and commonly used[7]. As environmental disturbance increases, rare species tend towards extinction, while globally common species multiply and

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[1] See the candidate Essential Biodiversity Variables, from Group on Earth Observations. Available at: https://geobon.org/ebvs/what-are-ebvs/
[2] Seddon et al. (2016). Biodiversity in the Anthropocene: prospects and policy. *Proceedings of the Royal Society B: Biological Sciences*, 283.
[3] Seddon et al. (2016). Biodiversity in the Anthropocene: prospects and policy. *Proceedings of the Royal Society B: Biological Sciences*, 283.
[4] Shwartz et al. (2017). Scaling up from protected areas in England: The value of establishing large conservation areas. *Biological Conservation*, 212.
[5] Seddon et al. (2016). Biodiversity in the Anthropocene: prospects and policy. *Proceedings of the Royal Society B: Biological Sciences*, 283.
[6] Feld et al. (2009). Indicators of biodiversity and ecosystem services: a synthesis across ecosystems and spatial scales. *Oikos*, 118.
[7] E.g. used in the RSPB State of Nature report and Living Planet Index

spread: a process known as biotic homogenisation[8]. Although common species may be able to deliver similar ecosystem services under **current environmental conditions**[9], the loss of rarer species may threaten the resilience[10] of ecosystem function and service provision under predicted **future environmental conditions**[11,12]. Some rare species can play critical functional roles and are 'keystone' species in their ecosystems[13], for example the sea otter, whose predation limits the expansion of urchin beds and maintains kelp forests[14].

Within the UK, the impact of species loss on ecosystem function has not yet been fully realised, potentially because functionally important species have not yet been lost or their functional role has been replaced by an alternative species (an 'insurance' effect of increased biodiversity)[15]. However, under increasing environmental disturbance it is likely that a tipping point will be reached where ecosystems will begin to fail[16]. This may disproportionately affect some ecosystem services, with pollination and pest control most prone to loss in service provision[17]. Loss of such services would be of genuine economic concern to Welsh agriculture, with pollinators in the UK valued at £430 million per year[18].

Alongside its instrumental value, biodiversity also has intrinsic value. This must remain an important driver for conservation effort[19]; an ecosystem services approach should be complimentary, not conflicting. Biodiversity should be maintained for non-anthropocentric reasons, as species are "the product of a long history of continuing evolution by means of ecological processes, and so they have the right to a continued existence"[20]. In line with this moral argument, the extinction of rare species and habitats should be prevented, irrespective of their functional contribution to the ecosystem. Whilst an ecosystem services approach may also be mutually beneficial to biodiversity conservation (a win-win), it is important to identify situations for which this is not the case[21]. Decision-makers must be realistic and identify the gap species, habitats and ecological processes, for which different approaches may be required for their future persistence[22].

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[8] McKinney & Lockwood. (1999). Biotic homogenization: a few winners replacing many losers in the next mass extinction. *Trends in Ecology and Evolution*, 14.

[9] Winfree et al. (2015). Abundance of common species, not species richness, drives delivery of a real-world ecosystem service. *Ecology Letters*, 18.

[10] "Ecosystem resilience is the inherent ability to absorb various disturbances and reorganize while undergoing state changes to maintain critical functions." Sasaki et al. (2015). Perspectives for ecosystem management based on ecosystem resilience and ecological thresholds against multiple and stochastic disturbances. *Ecolgoical Indicators*, 57.

[11] Leitao et al. (2016). Rare species contribute disproportionately to the functional structure of species assemblages. *Proceedings of the Royal Society B*, 283.

[12] Oliver et al. (2015). Biodiversity and resilience of ecosystem functions. *Trends in Ecology and Evolution*, 30.

[13] Power et al. (1996). Challenges in the Quest for Keystones. *BioScience*, 46.

[14] Estes & Palmisano. (1974). Sea Otters: Their Role in Structuring Nearshore Communities. *Science*, 20.

[15] Oliver et al. (2015). Declining resilience of ecosystem functions under biodiversity loss. *Nature Communications*, 6.

[16] Oliver et al. (2015). Declining resilience of ecosystem functions under biodiversity loss. *Nature Communications*, 6.

[17] Oliver et al. (2015). Declining resilience of ecosystem functions under biodiversity loss. Nature Communications, 6.

[18] Smith et al. (2011). Regulating Services, in The U.K National Ecosystem Assessment Technical Report.

[19] Ghilarov. (2000). Ecosystem Functioning and Intrinsic Value of Biodiversity. *Oikos*, 90.

[20] Alho. (2008). The value of biodiversity. *Brazilian Journal of Biology*, 68.

[21] Naidoo et al. (2008). Global mapping of ecosystem services and conservation priorities. *PNAS*, 105.

[22] Ingram et al. (2012). Applying Ecosystem Services Approaches for Biodiversity Conservation: Benefits and Challenges. *Sapiens*, 5.

Biodiversity conservation should be at the heart of the new PGS, not a by-product; increased biodiversity will improve delivery and resilience of ecosystem services, as well as respect the intrinsic value of species. By conserving biodiversity, Wales will be able to meet both international and national commitments. Internationally, Aichi target 12 from the Convention on Biological Diversity, to which the UK is a signatory, requires the prevention of further extinctions by 2020[23]. In Wales, the Environment Act 2016 Section 7 states the government must "take all reasonable steps to maintain and enhance" populations of priority species and habitat[24]. In addition, the Well-being of Future Generations (Wales) Act 2015, goal 2, describes a resilient Wales as; "A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change)"[25]. Therefore, Wales has an obligation to protect and restore the wildlife it holds.

1.2 Agricultural intensification has contributed to the current depleted state of biodiversity in Wales

Although some Welsh species, including red kites and otters, have recently improved in population status[26], the overall trend for Welsh wildlife is one of ongoing net decline[27]. Indeed, Wales was found to be in the lowest fifth of 218 countries analysed in the Biodiversity Intactness Index (BII)[28]. Biodiversity decline has been driven by pressures that are primarily linked to agricultural activities, including the loss, degradation and fragmentation of habitats; over-exploitation and unsustainable use of natural resources; and excessive nutrient input and greenhouse gas emissions[29,30]. Globally, this has led to significant changes in ecosystem function[31,32], threatening ecosystem services essential for agriculture, including pollination[33], natural pest control[34], and groundwater recharge[35].

We are pleased to see the acknowledgement of the environmental problems associated with the Common Agriculture Policy (CAP). Research has strongly linked Pillar 1 payments to increased agricultural intensification and associated environmental degradation[36]. Pillar 2 payments, which include income for conservation measures, have only shown limited success in reversing

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[23] Aichi Biodiversity Targets from the Convention on Biological Diversity Strategic Plan 2011-2020.
[24] Environment (Wales) Act 2016 Section 7.
[25] Well-being of Future Generations (Wales) Act 2015: Part 2- Improving well-being
[26] RSPB. (2016). State of Nature: Wales Report.
[27] RSPB. (2016). State of Nature: Wales Report.
[28] RSPB. (2016). State of Nature: Wales Report.
[29] RSPB. (2016). State of Nature: Wales Report.
[30] Burns et al. (2016). Agricultural Management and Climatic Change Are the Major Drivers of Biodiversity Change in the UK. *PLoS ONE*, 11.
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[34] Bianchi et al. (2006). Sustainable pest regulation in agricultural landscapes: A review on landscape composition, biodiversity and natural pest control. *Proceedings of the Royal Society B: Biological Sciences*, 273.
[35] Wada et al. (2010). Global depletion of groundwater resources. *Geophysical Research Letters*, 37.
[36] Pe'er et al. (2014). EU agricultural reform fails on biodiversity. *Science*, 344.

environmental degradation and biodiversity loss[37,38]. Thus, restoring biodiversity will require both a reduction in the negative externalities of agricultural intensification, such as pollution and grazing, and an increase in conservation measures, such as habitat creation and restoration.

1.3 Intensive agricultural can have high environmental costs

Our original response to the "[Brexit Our Land](https://www.britishecologicalsociety.org/policy/reports-publications/consultation-inquiry-responses/)"[39] consultation addressed many of the threats to biodiversity and ecosystem services associated with intensive agriculture, as well as opportunities for change. This was predominantly addressed in the answer to question 10 and included:

- Reduced soil quality (previous response, section 10.1)
- Reduced water quality (10.2)
- Loss of natural flood defences (10.3)
- Reduced air quality (10.4)

1.4 Conservation measures

Alongside reductions in environmentally damaging practices, there are various types of conservation actions a land manager could undertake to further increase biodiversity, including management of the general landscape, and species-specific interventions within a landscape[40].

1.4.1 Target-focused land management (e.g. creation and restoration of priority habitats)

In the absence of unlimited funds, priority setting is an essential element of conservation planning[41,42]. Decision-makers may need to choose conservation targets of specific populations, species and/or habitats, depending on their conservation status and/or importance to ecosystem service delivery[43,44].

In Wales, the agri-environment scheme (AES) options resulting in the greatest biodiversity gain is associated with arable management (e.g. winter stubbles), serving a select number of species also associated with arable land[45]. Their success is likely because these schemes result in a dramatic change from an unfavourable habitat to a completely different but more favourable habitat. However, only 13% of Welsh agricultural land is arable, and most species rely on grassland or

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[37] Shwartz et al. (2017). Scaling up from protected areas in England: The value of establishing large conservation areas. *Biological Conservation*, 212.
[38] Pe'er et al. (2014). EU agricultural reform fails on biodiversity. *Science*, 344.
[39] British Ecological Society: Policy: Consultation and Inquiry Responses. https://www.britishecologicalsociety.org/policy/reports-publications/consultation-inquiry-responses/
[40] IUCN – CMP Conservation Actions Classification v 2.0
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[43] Noss et al. (2009). Prioritizing ecosystems, species, and sites for restoration.
[44] Evans et al. (2013). The robustness of a network of ecological networks to habitat loss. *Ecology Letters*, 16.
[45] MacDonald et al. (In Press). Have Welsh agri-environment schemes delivered for focal species? Results from a comprehensive monitoring programme. *Journal of Applied Ecology*.

other semi-natural habitats[46]. In Wales, AES management of these semi-natural habitats does not deliver higher species abundance, despite doing so elsewhere in the UK[47]. Potential reasons for this failure include:

- Low uptake – Tir Gofal only covers 22% of agricultural land, with a much smaller percentage of this being semi-natural habitat[48].
- Poor understanding of species biology – AES management options for specific species has often not gone beyond general habitat management and has lacked the necessary specificity to benefit monitored species[49].
- Poor starting habitat quality of many sites means that demonstrable biodiversity gains are only possible over longer periods[50].

As the current AES options in Wales are not delivering significant biodiversity increases, it is likely ecosystem functioning and ecosystem service delivery is reduced[51].

To combat biodiversity decline and improve ecosystem function, in the face of environmental and manmade perturbations, the Lawton principles of Bigger, Better, More, and Joined (BBMJ), are applicable to Wales, and public goods payments should finance the creation of an improved network of habitats[52,53]. In practice, this would mean semi-natural habitats within agricultural landscapes should be larger in size and more effectively managed. Furthermore, there should be more of each semi-natural habitat within a landscape, and the patches should be better connected with high-quality habitat corridors and lower intensity agricultural landscape surrounding them.

When determining the long-term resilience of an ecological network, it is important to understand the resilience of the various species within, both in terms of their persistence and their continued role in ecosystem functioning. Understanding of complex species interactions networks has grown considerably[54,55]. Through technology, such as 'barcoding' and genetic algorithms, we can understand the functional role species play within their ecosystem and thus the impacts of their

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[46] MacDonald et al. (In Press). Have Welsh agri-environment schemes delivered for focal species? Results from a comprehensive monitoring programme. *Journal of Applied Ecology*.
[47] MacDonald et al. (In Press). Have Welsh agri-environment schemes delivered for focal species? Results from a comprehensive monitoring programme. *Journal of Applied Ecology*.
[48] MacDonald et al. (In Press). Have Welsh agri-environment schemes delivered for focal species? Results from a comprehensive monitoring programme. *Journal of Applied Ecology*.
[49] MacDonald et al. (In Press). Have Welsh agri-environment schemes delivered for focal species? Results from a comprehensive monitoring programme. *Journal of Applied Ecology*.
[50] MacDonald et al. (In Press). Have Welsh agri-environment schemes delivered for focal species? Results from a comprehensive monitoring programme. *Journal of Applied Ecology*.
[51] Seddon et al. (2016). Biodiversity in the Anthropocene: prospects and policy. *Proceedings of the Royal Society B: Biological Sciences*, 283.
[52] Isaac et al. (2018). Defining and delivering resilient ecological networks: Nature conservation in England. *Journal of Applied Ecology*, 55.
[53] Lawton. (2010). Making space for nature: A review of England's Wildlife Sites and Ecological Network.
[54] Evans et al. (2013). The robustness of a network of ecological networks to habitat loss. *Ecology Letters*, 16.
[55] For reviews, see: Fontaine et al. (2011). The ecological and evolutionary implications of merging different types of networks. *Ecology Letters*, 14; and Kefi et al. (2012). More than a meal… integrating non-feeding interactions into food webs. *Ecology Letters*, 15.

potential extinction[56]. This can be done for multiple species at once, looking at changes over large temporal and spatial scales[57]. This technology can be combined with high resolution remote sensing of real landscapes to quantify actual network resilience. Given the costs associated with creating and managing ecological networks, decision-makers should harness these powerful tools in order to predict and optimise the outcomes of public good investments in biodiversity[58].

When deciding on-the-ground actions to improve the network (BBMJ), simpler proxies would need to be used to confer network resilience, for example changes in: area of high-quality habitat; median patch size; total area of suitable habitat for multiple species; and network conductance[59]. In order to continually improve upon decision-making, decisions should form part of an adaptive management cycle, linking science, planning, and implementation. When evaluating action effectiveness initially, interventions should be measured against non-intervention 'control' sites, for instance, to see whether intervention sites are experiencing lower extinction rates and/or higher colonization rates than control sites[60]. The most effective actions identified are then implemented, continually monitoring their success locally and across the network, over longer time scales[61].

Whilst this practice will improve biodiversity in general, decisions will still need to be made for which population/species/habitat to target for protection and restoration. This can be done with an ecosystem service outcome in mind (e.g. expanding a peatland that sequesters carbon or increasing the population of an important pollinator), and/or purely to improve the recovery of rare species/habitats. Again, it is important to reiterate that prioritising one option over another may result in trade-offs – e.g. increasing connectivity for one target pollinator species may lead to the spread of an invasive species that harms a different target rare species[62]. Assessing the benefits (and those that are foregone because of trade-offs) will enable payments to be linked directly to actions and will make the economic case to both the farmers and public[63].

1.4.2 Process-focused land management

As much of our current biodiversity depends on the preservation and restoration of semi-natural habitats[64], it is important they are created and maintained as core areas of biodiversity in a

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[56] Evans et al. (2013). The robustness of a network of ecological networks to habitat loss. *Ecology Letters*, 16.
[57] Isaac et al. (2018). Defining and delivering resilient ecological networks: Nature conservation in England. *Journal of Applied Ecology*, 55.
[58] Isaac et al. (2018). Defining and delivering resilient ecological networks: Nature conservation in England. *Journal of Applied Ecology*, 55.
[59] Isaac et al. (2018). Defining and delivering resilient ecological networks: Nature conservation in England. *Journal of Applied Ecology*, 55.
[60] Isaac et al. (2018). Defining and delivering resilient ecological networks: Nature conservation in England. *Journal of Applied Ecology*, 55.
[61] Isaac et al. (2018). Defining and delivering resilient ecological networks: Nature conservation in England. *Journal of Applied Ecology*, 55.
[62] Isaac et al. (2018). Defining and delivering resilient ecological networks: Nature conservation in England. *Journal of Applied Ecology*, 55.
[63] Strassburg et al. (2018). Strategic approaches to restoring ecosystems can triple conservation gains and halve costs. *Nature Ecology and Evolution*, 3.
[64] Duelli and Obrist. (2003). Regional biodiversity in an agricultural landscape: the contribution of semi-natural habitat islands. *Basic and Applied Ecology*, 4.

patchwork landscape of diverse habitats. However, in other areas, different options may be more appropriate for increasing biodiversity and delivering ecosystem services. Rewilding could represent a cost-effective solution to enhance biodiversity and ecological resilience in degraded agricultural landscapes, due to rewilding's goal of "self-sustaining provision of ecosystem services with minimal ongoing management"[65].

Rewilding is an option for the management of certain agricultural landscapes and could represent a transformative approach to conserving biodiversity in Wales. Environmental change is increasingly undermining the function of ecosystems under a target-focused approach[66]. Given the recent declines in biodiversity, continuing restoration to historical benchmarks or modern likely equivalents may no longer be an option. Thus, to ensure ecosystems can maintain biodiversity and function, allowing delivery of ecosystem services over the long term, rewilding may be the most appropriate option for damaged ecosystems[67]. As with the restoration of semi-natural habitats, following the BBMJ principles will be important for rewilding areas too.

1.4.3 Delivering conservation at scale

Delivering biodiversity public goods will require partnerships between landowners, where such collaboration is needed to deliver schemes at the appropriate spatial scale to restore or enhance ecosystem services[68,69,70]. Indeed, research[71] into spatial coordination of environmental management from five EU member states found that groups of farmers who formed an organisation were more effective in delivering agri-environment objectives[72]. A farm-level only focus to PGS would, therefore, be a missed opportunity for delivering public goods.

This approach should be guided by a spatial vision that strategically improves landscape heterogeneity. For instance, a mix of perennial habitats such as forests, hedgerows, river corridors and perennial grasslands will create more complex and hence more biodiverse landscapes[73]. Landscapes with greater structural complexity will also improve ecosystem functions for farms by increasing pest suppression and supporting pollinators[35].

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[65] Pettorelli et al. (2018). Making rewilding fit for policy. *Journal of Applied Ecology*, 55.
[66] Pettorelli et al. (2018). Making rewilding fit for policy. *Journal of Applied Ecology*, 55.
[67] Pettorelli et al. (2018). Making rewilding fit for policy. *Journal of Applied Ecology*, 55.
[68] Anthony et al. (2012) Contribution of the Welsh Agri-Environment Schemes to the Maintenance and Improvement of Soil and Water Quality, and to the Mitigation of Climate Change. Agri-Environment Monitoring and Technical Services Contract Lot 3: Soil, Water and Climate Change (Ecosystems). Welsh Government, Cardiff, UK.
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[72] South Downs National Park Authority. (2018). Selborne farm cluster. [Online]. Available at: https://www.southdowns.gov.uk/national-park-authority/our-work/farm-clusters/selborne-farm-cluster/
[73] Concepcion et al (2008). Effects of landscape complexity on the ecological effectiveness of agri-environment schemes. *Landscape Ecology*, 23: pp.135–148.

The effectiveness of previous and current agri-environment schemes is highly variable, and often depends on the level of engagement, experience and skills of the farmer[74]. Studies from across the UK have shown biodiversity outcomes improving when farmers and landowners received training[75,76]. Supporting and encouraging peer-to-peer support among farmers also significantly improves environmental outcomes, with farmers feeling more confident and being more likely to engage in environmental management in their wider area[77,78,79,80].

1.4.4 Specific species management

In general, effective habitat management should sustain larger populations of species. However, for certain species, it may be appropriate to perform additional management actions to reach this outcome. Delivery of ecosystem services and biodiversity conservation outcomes may be improved through more active conservation measures, including artificial nesting sites, translocation of species vulnerable to climate change, or even reintroductions. Such actions can serve multiple purposes:

The presence of popular, charismatic species can have huge economic benefits; for example, 290,000 people visit osprey sites in the UK every year, bringing in an estimated £3.5 million to surrounding areas[81]. Other charismatic species, such as beavers, can provide additional benefits. Beavers act as "ecosystem engineers", improving habitat quality and increasing an area's biodiversity value, therefore enhancing public goods in that area[82].

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[74] McCracken et al (2015) Social and ecological drivers of success in agri-environment schemes: the roles of farmers and environmental context. *Journal of Applied Ecology,* 52: pp. 696-705.

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[78] Rose Regeneration. Putting the Spotlight on Farming Communities: The role of Farmer Networks in challenging areas. Farmers Network Project report 2013. Commissioned by the Royal Agricultural Society of England (RASE).

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[82] Law et al. (2017). Using ecosystem engineers as tools in habitat restoration and rewilding: beaver and wetlands. *Science of The Total Environment*, 605-606.

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

The UK's impending withdrawal from the European Union is likely to lead to major changes to the way that agricultural subsidies will be paid in Wales, with the most likely change being a greater emphasis on paying public money for public goods, including ecosystem services as well as biodiversity. The new Environment and Rural Affairs Monitoring and Modelling Programme (ERAMMP), is currently being implemented as a successor to the Glastir Monitoring and Evaluation Programme (GMEP). Earlier Welsh AES were the subject of monitoring programmes between 2009 and 2012, with separate components focusing on ecosystem services, habitats and species. The results of species monitoring have recently been accepted as a peer-reviewed article in the Journal of Applied Ecology[83].

The species monitoring programme included dedicated field work to survey a range of taxa: arable plants, grassland fungi, bats (six species), butterflies (three species), birds (five species), and terrestrial mammals (two species), with AES sites selected on the basis of the presence of prescriptions predicted to be beneficial to the taxa in question. Spatial analysis was required, as the monitoring programme did not include re-surveys. The results indicated limited benefits of AES management, although taxa dependent on arable habitats were more likely to be more abundant or species-rich in farms or fields under AES agreements than non-AES farms or fields.

The approach taken by Glastir Monitoring and Evaluation Programme (GMEP) towards species monitoring differed from this earlier monitoring in two key respects: Firstly, it employed a re-surveying strategy, allowing for changes over time to be detected, and enabling the effects of AES management to be more confidently attributed. We welcome this approach. Secondly, it did not target dedicated field work to species of conservation concern; rather, it developed indices of taxonomic groups, and reported habitat quality. This latter approach may be understandable when carrying out a national monitoring programme, as scarce species are more difficult to detect when sampling sites are randomly located.

Nevertheless, we recommend that ERAMMP does take account of scarce species. The ecological needs of some species are imperfectly known, and effects other than habitat quality (for example, predation pressure) may mean that measures of habitat quality may not accurately reflect the impact of AES on the species they are intended to benefit. Planning and carrying out a species-focused monitoring programme in Wales has been possible in the past, and should form part of ERAMMP. This would be additional to the existing survey methods used by GMEP: considering the

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[83] MacDonald et al. (In Press). Have Welsh agri-environment schemes delivered for focal species? Results from a comprehensive monitoring programme. *Journal of Applied Ecology*.

amounts paid in agricultural subsidies, a small fraction of these resources for effective monitoring should be considered an investment rather than a cost.

Additionally, we recommend that the design of the new AES should include more specific aims for species, as well as other elements. This would allow monitoring to evaluate AES against targets, rather than non-specific aspirations. To some extent, the use of the term “biodiversity” is unhelpful in determining goals. Does biodiversity refer to general species richness (and if so, of which taxa), abundance of priority species (and if so, which ones), or the presence and quality of habitats? Explicitly including targets for species of interest would avoid this ambiguity. These aims need not be unrealistic, but they would assist in providing an honest appraisal of what we hope to provide through public funds.