Leverhulme Centre for Nature Recovery

Consultation response: White Paper on environmental principles, governance and biodiversity targets

April 2024

From time to time the Leverhulme Centre for Nature Recovery responds to call for evidence on topics that relate to nature recovery and where its researchers can provide expert insight.

The Welsh Government launched a consultation on a White Paper on environmental principles, governance and biodiversity targets in January 2024.

This response was written by Jed Soleiman (https://www.naturerecovery.ox.ac.uk/people/jedsoleiman/) on behalf of the Leverhulme Centre for Nature Recovery and was submitted on 30 April 2024. It responds to questions BT2 and BT4 in the consultation document.

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The Leverhulme Centre for Nature Recovery (LCNR) aims to understand and support what it takes to deliver effective, inclusive and scalable nature recovery. LCNR is located at the University of Oxford and is funded by the Leverhulme Trust. LCNR brings together experts from multiple disciplines (e.g. governance, economics, medical sciences, ecology, AI) to understand better the factors that enable or challenge nature recovery.

More information is at www.naturerecovery.ox.ac.uk.

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BT2: To what extent do you agree or disagree with the inclusion within the Bill of the statutory nature positive headline target: 'to reverse the decline in biodiversity with an improvement in the status of species and ecosystems by 2030 and their clear recovery by 2050'.

In principle, we agree with the above statement, however believe it must go further in order to be able to achieve this goal. Long term success not only relies upon a diversity and abundance of species, but also in targeting improvements to the overall functioning of an ecosystem (or its 'ecosystem services') (Lawton et al., 2010).

Ecosystem functions refer to processes that are created as a result of interactions between species, often at larger spatial scales, such as many deep-rooted plants moving nutrients from the depths of the soil to be available at the surface, cycling them or improving soil burrowers (such as earthworms) which can improve water infiltration rates and reduce possible flooding. Rewilding is an example of an approach to achieve this, and when done in appropriate areas and with the inclusion of local communities can simultaneously help produce both goals, with the creation of new habitats helping protect local biodiversity (such as nightingales and turtle doves), which in turn positively impacts ecosystem functioning (Svenning, 2020; Carver et al., 2021; Perino et al., 2019). This not only helps perpetuate a positive feedback cycle that produces diverse and lively ecosystems that can support more species, but ones that require little human intervention, resources, or maintenance, keeping down overall costs. Therefore, targeting the improvement of ecosystem functioning through approaches such as rewilding would ensure that our ecosystems are not only full of the right species, but that they are successfully interacting with each other and the environment to produce a well-functioning ecosystem, producing outcomes that benefit both people and nature.

We also would advise against using the term 'status' when referring to species or ecosystems as it is unclear as to how this will be qualified. Including terms such as 'diversity' and 'abundance' is explicit in the needed outcomes, whilst also allowing room for a diverse range of management actions.

Therefore, combining these suggestions, we propose to change the headline statement to 'to reverse the decline in the diversity and abundance of native species and to improve the function of ecosystems by 2030, and the clear recovery of nature by 2050'.

BT4: Potential suite of supporting targets, to underpin the headline target, are likely to be:

- *Species – distribution abundance and extinction risk;*
- *Habitat – protection, management and restoration; and*
- *Ecosystem health and resilience – recognising the key role and contribution of ecosystems.*

To what extent do you agree or disagree with the key areas proposed for the biodiversity targets to be introduced in secondary legislation in the Wales Nature Recovery Framework?

To achieve the amended statement above, we propose changes to the supporting targets that will help reach these goals. The main missing objective here pertains to connectivity within the landscape, which helps to share physical and genetic resources and therefore improves their provision for all wildlife and ecosystems (Beger et al., 2022). This means that if a particular patch that has been protected for nature is threatened, the wildlife found there has the ability to move and forage for resources to an unaffected area; without this provision the entire patch can experience long-term degradation which can be very difficult to reverse. This means that without connectivity, efforts to improve habitats and species diversity may be in vain as organisms are not able to reach and physically recolonise in these areas. Moreover, increasing environmental connectivity also expands the available area for biodiversity to thrive, holding a greater diversity and abundance of wildlife than could have been supported by each individual patch.

This fits closely with the recommendation of the 2010 Lawton review of 'more, bigger, better, and joined' with 'joined' being key to achieving the rest of these targets (Lawton et al., 2010). It is unlikely that without this diverse landscape scale matrix of habitats that we will have enough areas suitable to provide homes and food sources to wildlife. There are many ways to achieve this as different organisms have different modes of travel e.g. a deer will need a physical walking route whereas a butterfly may need a series of suitable nectar sources between patches. One approach to achieve this whilst also working with rural communities is the promotion of regenerative agriculture, that both improves provisions for nature whilst also reducing external inputs (fertiliser, pesticides and their associated financial and ecological cost) (Cusworth and Garnett, 2023). We therefore propose the explicit inclusion of 'Connectivity' as one of these key supporting targets of the target headline, making explicit how key connecting different habitats together is in achieving nature recovery.

We also propose the alteration of 'ecosystem health and resilience' to sit under a new umbrella term of 'ecosystem function' which encapsulates the wants of this goal, whilst broadening this category to place emphasis on all the outcomes targeting function has beyond just ecosystem health and its resilience; this being just one facet. This goal acts as a 'check and balance' upon the others as it is reliant upon having a diversity of species, habitats, and connectivity types to meet varied functional targets. This goal is also well accompanied by the need to restore missing ecosystem actors that have been absent from the British Isles who could help return this absent function. As the UK has lost many of its native species, there are many open functional niches that upon filling could help support the remaining native ecologies to thrive. The actions of these organisms can restore lost functions to the landscape which can be beneficial, such as beavers creating dammed streams that turn into wetlands and benefit many amphibians and insects. It is also important to note that some organisms may be functionally identical to others, however this does not mean the presence

of only one should be targeted. By having multiple species that can perform the same function in one ecosystem, this creates functional redundancy (where another organism can replace the function of one that might have been lost) and therefore ecosystem resilience in the face of shocks.

Finally, three key principles underline all the supporting targets to ensure continuity in their actions and approaches.

1) The first such principle pertains to considering ecological dynamism, ensuring we recognise the inherent ebbs and flows that define the cycles of nature and incorporate this contextual understanding into our measurement of recovery. As nature is highly complex and therefore unpredictable, KPIs must be assessed semiholistically to take into account possible interplay with known or unknown factors e.g. a prolonged and intense drought which could reduce the abundance of certain species.

2) The second of these is to ensure each supporting target takes a multiscalar approach to ensure that all actions are comprehensively considered in their impact, especially at the landscape scale. It is at this scale that much reinforcement of the local supporting targets can occur, smoothing out some of this complexity and unpredictability, and is therefore integral to long-term overall success.

3) The final principle is the recognition that humans and nature are not separate, but that humanity is nature and exists entirely within its bounds. Whilst the inclusion of this principle might seem a curiosity, this principle highlights that all actions taken for nature should be done in consultation and with the active inclusion of local communities, ensuring their needs and wants are taken into account. When done well, this can prove a powerful way to ensure the longevity and success of projects, providing opportunities for local champions who are best placed to help them thrive.

References

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