Case Study 5: Rewilding

The Statutory Biodiversity Metric Calculation Tool

This case study demonstrates how the statutory biodiversity metric calculation tool can quantify habitat losses and gains associated with rewilding projects, to calculate biodiversity net gain.

This document complements statutory biodiversity metric guidance and may be useful for users and reviewers of the biodiversity metric tool, when it is used for rewilding projects aiming to achieve biodiversity net gain as part of planning permission or voluntarily.

Overview

This case study discusses a hypothetical rewilding project in which the habitats present change over time through a relaxing of management and natural succession. It demonstrates how the statutory biodiversity metric calculation tool (hereafter referred to as 'the biodiversity metric tool') can be applied to rewilding projects to quantify predicted changes in habitats that occur through rewilding, often over many decades, and demonstrate biodiversity net gain.

For projects requiring biodiversity net gain as part of planning permission, guidance on the full biodiversity net gain process can be found on the GOV.UK website.

This case study demonstrates:

- The application of the biodiversity metric tool to a rewilding project to calculate predicted changes in biodiversity units that are generated through both deliberate management intervention or through natural habitat changes and succession.
- The application of a precautionary approach when predicting habitats that may develop, and the use of multiple phases for long-term projects.
- The opportunity that rewilding projects can present to landowners for generating biodiversity unit 'sales' over time.

The site

This case study considers the hypothetical rewilding of a site which was previously used as an intensive dairy farm, and predominantly composed of improved 'modified grassland', with small areas of scrub, woodland, hedgerow and ditch habitats, all classified using UK Habitat Classification (UKHab).

The rewilding project will involve the landowner removing internal fences within the site and introducing hardy cattle breeds at a very low stocking density. Habitats will then be left to develop naturally with minimal management intervention.

Approach to biodiversity net gain assessment

Key elements of the statutory biodiversity metric guidance and biodiversity net gain guidance relevant for this case study are highlighted below, with a discussion of their application. The full guidance should be referred to for more information.

Rewilding primarily relies on allowing habitats to develop and evolve over time through natural succession, with little to no management intervention. However, rewilding projects may involve the initial creation of some habitats, for example digging ponds or creating wetland areas to provide water for livestock, and planting or seeding to encourage the development of certain habitats. Habitat changes resulting from projects such as rewilding can be accounted for within the biodiversity metric tool.

The biodiversity metric tool calculates how many biodiversity units a site scores prior to a project commencing (at 'baseline'), and estimates the number of biodiversity units delivered (at 'post-intervention') based on predicted habitat types and their attributes. Those attributes include habitat distinctiveness – which directly relates to habitat type, as well as habitat condition, strategic significance, and for watercourses – riparian and watercourse encroachment.

'Area habitats' measured in hectares, and hedgerow and watercourse habitats measured in kilometres, are all included in this case study, and the biodiversity units for these three modules are treated separately and cannot be summed, traded, or converted.

When recording expected habitat changes due to rewilding in the biodiversity metric tool – whether that be through management or natural changes – the guidance set out in the User Guide needs to be followed. The approach is summarised below:

- Enhancement is where a habitat improves by distinctiveness or condition, for example low distinctiveness 'modified grassland' to medium distinctiveness 'other neutral grassland'. A change from one habitat to another which has the same, or lower distinctiveness or condition cannot be recorded as enhancement.
- Creation is where a habitat changes to another type which is in a different broad habitat type, for example a grassland habitat to a scrub habitat.

Assumptions and limitations

Predicting future habitat composition and quality

For rewilding projects which use the biodiversity metric tool, a competent person should use relevant evidence and their ecological expertise when predicting the type, condition and proportions of habitats that may develop.

- It is possible to predict the habitat types that are likely to develop on-site with some confidence, using site information on physical factors such as geology, topography, and hydrology, as well as the habitats present at baseline and nearby.
- It may be more difficult to predict the proportions of habitats and the condition that they are likely to reach within a specified timeframe, such as the minimum 30 years that will apply to mandatory net gain provision.

The habitat type and condition predicted should be realistically achievable within the project timeframe. Targeting habitats such as 'wood-pasture and parkland' (see UKHab definition), which can take many decades or even centuries to develop, is not usually appropriate unless justifiable. However, a habitat such as this could still be achieved in the longer term, while assigning the most appropriate habitat types in the biodiversity metric tool in the shorter term.

Because of the uncertainty in predicting the outcome, rewilding projects should adopt a precautionary and incremental approach to forecasting the proportions of different habitat types to avoid setting overly-ambitious initial targets. This allows for key 'phases' of habitat change to be identified and recorded. Once it has been verified that the target habitat types and conditions have been achieved in their proposed quantities, the project could provide additional biodiversity units into the net gain market with subsequent habitat enhancements, which need securing in an updated legal agreement. This approach should be taken when aiming to create complex habitats that take a long time to develop, such as 'wood-pasture and parkland'. In this situation, a separate biodiversity metric would be produced for each 30-year phase, recording the baseline, and most appropriate projected habitat types for each 30-year period.

For any rewilding project, habitat estimations will also be dependent on many influencing factors including grazing pressure and the method of vegetating the area – for example seeding, planting or reliance on self-seeding from local seed sources. This, and any other assumptions made, should be explained within the 'User Comments' boxes of the biodiversity metric tool.

In practice, proposed habitats require monitoring and oversight by an ecologist to ensure that the estimated area of each habitat and its target condition is going to be achieved. Monitoring may highlight any required management interventions needed, or a recalculation of the biodiversity units predicted to be delivered by the project.

For this hypothetical case study, it is assumed that the habitats will develop in the following ways over the first 30-year phase:

- Approximately one third of the original 'modified grassland' will be retained and will improve in species-richness and structure to become 'other neutral grassland' in good condition due to the presence of grazing animals and the absence of pesticide and fertiliser application.
- The remaining areas will develop into a mosaic of approximately 50% scrub and 50% woodland, recorded on the habitat creation tab.

The following assumptions have also been made when recording the predicted habitat changes in the biodiversity metric tool:

Habitats

- All habitats are in poor condition at baseline.
- The enhanced hedgerow and ditch habitats will reach good condition, while 'modified grassland' will be enhanced by distinctiveness to become 'other neutral grassland' in good condition.
- Enhanced 'wet woodland', 'other woodland; broadleaved' and 'mixed scrub' is projected to reach moderate condition.
- Further creation of 'mixed scrub' is predicted to reach moderate condition, and 'other woodland; broadleaved' is predicted to be in poor condition.

The biodiversity metric tool multipliers

- There is no watercourse or riparian encroachment along the ditches.
- In this case study, there is no Local Nature Recovery Strategy (LNRS) covering the site yet, and the Local Planning Authority (LPA) has not specified suitable documents for identifying strategic significance. As such, in this case study, the competent person has assessed some habitats as being 'medium' strategic significance using their ecological expertise, because they are considered to be locally ecologically important, and they have provided justification, in accordance with the guidance.

Baseline area habitat, hedgerow, and watercourse biodiversity units

At baseline, the 50 ha site is predominantly made up of low distinctiveness ‘modified grassland’ with small areas of medium distinctiveness ‘mixed scrub’ and ‘other woodland; broadleaved’, with some high distinctiveness ‘wet woodland’, all in poor condition. There are also 0.77 km of medium distinctiveness ‘native hedgerow with trees’ and low distinctiveness ‘line of trees’ habitats in poor condition; and 2 km of medium distinctiveness ‘ditches’ in poor condition. Using the biodiversity metric tool, the baseline habitats present yield:

- 114.20 area habitat biodiversity units
- 2.68 hedgerow biodiversity units
- 8.00 watercourse biodiversity units

Losses and gains in these three biodiversity unit types are compared against the baseline to measure the net change. Tables 1, 2 and 3 shows the baseline area habitat, hedgerow, and watercourse details and the biodiversity unit values.

Table 1. Baseline area habitat details

Habitat type	Area (ha)	Habitat condition	Strategic significance	Total biodiversity units
Modified grassland	45	Poor	Low	90.00
Mixed scrub	2	Poor	Medium	8.80
Other woodland; broadleaved	2	Poor	Medium	8.80
Wet woodland	1	Poor	Medium	6.60
Total	50	-	-	114.20

Note: All habitat data presented in the tables of this case study are generated directly from the statutory biodiversity metric calculation tool. All photos are for illustrative purposes only.

Table 2. Baseline hedgerow habitat details.

Habitat type	Length (km)	Habitat condition	Strategic significance	Total biodiversity units
Native hedgerow with trees	0.45	Poor	Medium	1.98
Line of trees	0.32	Poor	Medium	0.70
Total	0.77	-	-	2.68

Table 3. Baseline watercourse habitat details

Habitat type	Length (km)	Habitat condition	Strategic significance	Total biodiversity units
Ditches with no encroachment	2	Poor	Low	8.00
Total	2	-	-	8.00

Post-intervention biodiversity units

Area habitats

In this case study, the expected changes to area habitats are due to either:

- Improvements in distinctiveness and condition as habitat structure and species diversity increase over time.
- Changes due to natural succession, as habitats develop into scrub and woodland.
- New areas of wetland habitat developing, as ditches become blocked or grazing animals trample banks and alter their structure.

Over the first 30 years of rewilding, it is predicted that 15 ha of ‘modified grassland’ will develop into approximately equal areas of ‘other neutral grassland’ – recorded as ‘enhanced’ in the biodiversity metric tool. This, in combination with the predicted enhancement of the scrub and woodland, generates 170.52 area habitat biodiversity units. Over this time, it is also expected that a mosaic of ‘mixed scrub’ and ‘other woodland; broadleaved’ will develop on 30 ha of ‘modified grassland’. This is recorded as ‘loss’ of grassland in the metric, and ‘creation’ of the replacement habitats, generating 165.69 area habitat biodiversity units. In total, these post-intervention habitats generate 336.21 area habitat biodiversity units, which is an uplift of 222.01 against the baseline, and a 194.40% net gain.

It is possible to achieve a further biodiversity net gain on-site once the first 30-year phase is complete and habitats have achieved their projected type and condition during this time. Following the first phase, a second phase of habitat enhancement and creation could take place during the 30-60 years following the baseline year. For the second phase, a new biodiversity metric tool would need to be populated, using the projected final state of the first phase as the new baseline state.

For example, over the second 30-year period, enhancements might include the ‘other neutral grassland’ continuing to increase in species diversity and meet the definition of a higher distinctiveness grassland.

Credit Natural England/Des Sussex, Summer 2016

Hedgerow habitats

During the first 30-year phase, 0.45 km of ‘native hedgerow with trees’ and 0.32 km of ‘lines of trees’ will be enhanced from poor to good condition as they mature naturally. This enhancement generates an additional 3.26 hedgerow biodiversity units, and a 121.34% net gain.

Where hedgerows are expected to expand due to relaxed management, the baseline width of the hedgerow should be treated as a ‘retained’ hedgerow in the biodiversity metric tool, and any additional width beyond the baseline should be recorded as the most appropriate habitat type, such as scrub. Professional ecological judgement and evidence should be used when deciding between hedgerow and adjacent developing habitats.

Watercourse habitats

No watercourse biodiversity units are lost as part of this project, however, the 2 km of ‘ditches’ present at baseline are recorded as enhanced by condition in the biodiversity metric tool. This is because the water quality and habitat structure are expected to improve. This improvement in condition generates 20.03 watercourse biodiversity units at post-intervention, with a 12.03 uplift amounting to a 150.40% net gain.

Table 4. Losses and gains of area habitat biodiversity units within the first 30-year phase.

Description	Biodiversity units
Baseline area habitat biodiversity units	114.20
Habitat enhancement: • 2 ha of ‘mixed scrub’ from poor to moderate condition, of medium strategic significance • 2ha of ‘other woodland; broadleaved’ from poor to moderate condition, of medium strategic significance • 1 ha of ‘wet woodland’ from poor to moderate condition, of medium strategic significance • 15 ha of ‘modified grassland’ in poor condition, with low strategic significance, to ‘other neutral grassland’ in good condition, of medium strategic significance	170.52
Habitat creation on former ‘modified grassland’: • 15 ha of ‘mixed scrub’ in moderate condition, of medium strategic significance • 15 ha of ‘other woodland; broadleaved’ in poor condition, of medium strategic significance	165.69
Net change in area habitat biodiversity units	+222.01
Total net gain in area habitat biodiversity units	+194.40%

Table 5. Losses and gains of hedgerow biodiversity units within the first 30-year phase.

Description	Biodiversity units
Baseline hedgerow biodiversity units	2.68
Habitat enhancement: • 0.45 km of 'native hedgerow with trees' from poor to good condition, of medium strategic significance • 0.32 km of 'line of trees' from poor to good condition, of medium strategic significance	5.94
Net change in hedgerow biodiversity units	+3.26
Total net gain in hedgerow biodiversity units	+121.34%

Table 6. Losses and gains of watercourse biodiversity units within the first 30-year phase.

Description	Biodiversity units
Baseline watercourse biodiversity units	8.00
Habitat enhancement: • 2 km of 'ditches' from poor to good condition, of low strategic significance with no riparian or watercourse encroachment	20.03
Net change in watercourse biodiversity units	+12.03
Total net gain in watercourse biodiversity units	+150.40%

Conclusions

This case study is based on a hypothetical rewilding project which has been simplified to illustrate how rewilding projects should be approached when using the statutory biodiversity metric calculation tool. It demonstrates how this biodiversity metric tool can be used to estimate the changing biodiversity unit value of the predicted losses and gains associated with natural succession, and how such projects can yield large net gains in area habitat, hedgerow, and watercourse biodiversity units. Consequently, projects such as the one described here could contribute to the local off-site net gain market, by becoming a provider of biodiversity units for developments that are unable to fulfil their net gain requirements on-site.

The reliability of predicted habitat type, condition and proportions can be increased by being precautionary and realistic, and using available information and ecological expertise when predicting them. Once these habitat predictions have been reached, and following the initial 30-year period, it is then possible to enter into a further net gain delivery agreement, or a second phase, for additional habitat changes occurring through natural succession. This can be done by creating a new biodiversity metric tool representing the second phase, with the new baseline reflecting the habitats present after the first 30 years, and following the same process as above, recording habitat changes as enhancement or creation.

By taking this approach, the biodiversity metric tool should not penalise rewilding projects that seek to achieve a specific end point, for example, traditional wood-pasture and parkland habitats, which may take many decades or hundreds of years to create.

Key messages and top tips

- Rewilding projects can produce high quality habitats which can contribute towards area habitat, hedgerow, and watercourse biodiversity unit delivery when recorded in the statutory biodiversity metric calculation tool.
- It is recommended that an incremental and precautionary approach is taken when predicting habitat type and condition, and area or length created.
- Regular monitoring and review should be undertaken to ensure habitats are developing into the predicted habitat types, conditions, and areas or lengths.
- The creation tab should be used to account for any deliberate or passive management intervention such as natural enhancement and succession, which results in a change from one broad habitat type to another.
- In most instances, where habitat changes or natural succession results in habitats evolving over time within the same broad habitat type, the habitat enhancement tab should be used to record habitat changes and improvements to the condition of any existing habitats.
- Any hedgerows or lines of trees which are retained should continue to be mapped and treated as hedgerows post-intervention. New scrub, developing beyond the baseline hedgerow width, should be recorded as the appropriate habitat type within the area habitat creation tab. Professional judgement should be used for these assessments.

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