How big is our biodiversity? Measuring the habitat opportunity on the railway estate Great Britain

Network Rail

BIG Biodiversity Challenge Award Category: *Innovation Award*

Project overview

Baseline measurement of the biodiversity across the railway estate in Great Britain. Safely, effectively and efficiently identifying habitats and measuring biodiversity across Network Rail's 52,000 hectare land holding in Wales, Scotland and England. Innovative techniques to identify the opportunity to support connectivity and nature recovery across Britain.

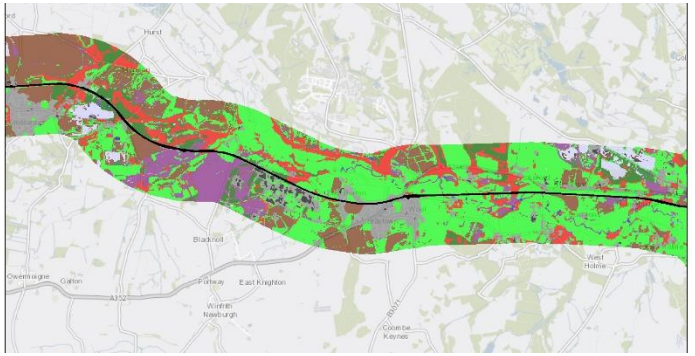
What were the biodiversity conditions on site, prior to the enhancement?

We knew we had biodiversity, but we didn't know how much. Public and regulatory scrutiny of Network Rail's vegetation management in 2018 focussed on the impact this work was having on biodiversity. Work always took existing legislation in to account, but biodiversity and habitats were not always considered. An independent review resulted in the Department for Transport policy recommendations for net gain of biodiversity by 2035. To achieve a net gain, we needed to determine a baseline. Studies have taken place on railway vegetation over the years, but the biodiversity of the estate had never been measured before.

What were the reasons behind this project ?

The railway needs constant management to keep passengers, front-line staff and trains safe. Our man-made assets are well known and understood. Environmental assets are less well recognised and often seen as a liability. Knowledge of the habitats alongside the railway can help with planning work on the estate. Work can then consider the types of habitat or species that may be impacted. We can schedule work appropriately and make plans for mitigation or offsetting if needed. The corridor of data we have through the British countryside will help us work with adjacent stakeholders for the benefit of people and nature.

The Network Rail lineside estate



Satellite remote sensing data showing habitat in the railway corridor

What were the biodiversity measures taken?

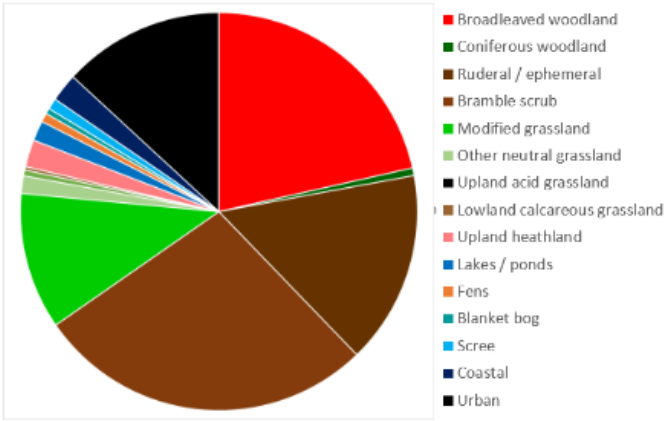
Biodiversity has been quantified for the first time in 200-years of the railway in Britain. We can view habitats on our land in the context of the landscape through which the railway passes. This view allows our managers to look after these habitats, working with adjacent landowners to the benefit of us all and the wildlife. Natural areas need to be bigger, better and more joined up; whilst we manage 52,000 hectares, the data we have collected covers 3.2 million hectares.

We have fifteen years to achieve challenging biodiversity targets. We have limited budget and a finite resource of surveyors. Traditional surveying methods need somebody 'in the field' which is time consuming and potentially difficult or dangerous. We worked with global experts to access satellite data, which has kept our surveyors safe and delivered accurate information.

This project has demonstrated the art of the possible and what others can do. It will transform the way that land managers will collect and interrogate data and plan interventions. Afterall, if you don't know where it is, how can you protect it? The information that has been derived has already successfully supported funding bids for feasibility projects; the success of that work has the potential to lead to significant research and development funded programmes.

Because the data we used are publicly available, work can be repeated for other sectors. The satellites that collect the data are operating across the globe and the technology is not limited to one country.

This knowledge informs the better, targeted management of habitats on our estate. These green corridors help the movement of isolated species and wildlife communities, improving genetic diversity and helping build resilience against climate change. Our good management of the railway estate will improve the health and well-being of millions of passengers and neighbours.



Proportion of habitats found on the railway estate in Britain

With correct habitat data, work with communities can be targeted

Further information

We now have data that are fundamental to the railway's role in nature recovery across Britain. We know the distribution of habitats across our land and a huge swathe of the British countryside. The legacy that this provides is a valuable dataset with which we can work with our neighbours to protect and enhance biodiversity. The first network-wide biodiversity baseline calculation in British railway history provides a benchmark by which the impact of operations can be measured. More importantly, it enables decisions on how and when to carry out those operations, and how to align them with what others are doing to maximise the benefit of people and wildlife. The innovative approach to collecting biodiversity data has provided data to support further research projects. Moreover, advances in technology will increase the data and improve the quality of information thus supporting our annual reporting cycle and ongoing commitment.

The health and safety of the travelling public and our neighbours is fundamental. However, we must also be aware of the any risk faced by our colleagues working on the estate – if we need biodiversity data, do we really need to be sending colleagues on to the track? A major lesson learned from this work is that good quality data can be collected remotely. For large estates, it can help identify where site visits may still be necessary. For all work it easily puts the management of your own biodiversity into the context of the landscape where it is found.

Project Team

- Network Rail
- UK Centre for Ecology and Hydrology

What was the motivation for carrying out the enhancement?

We were set an ambitious target of achieving biodiversity net gain on its estate in just under 20 years. A simple approach would have been to understand what was already present and then work towards the gain over the next couple of decades. By identifying habitats up to 1 kilometre from our fence, we have data for 15% of Great Britain. These data can be used to work with and support landowners and communities alongside the railway's green corridor. Better, targeted management of these connected habitats is now possible because of the work we have started and will continue annually.

	Units	Area (ha)
Network Rail	**247,581.00**	**51,160.63**
Eastern	62,784.46	15,688.82
North West & Central	49,570.58	11,194.49
Scotland's Railway	42,688.14	7,579.81
Southern	44,790.44	7,662.00
Wales & Western	47,745.78	9,035.51

Network Rail's biodiversity baseline

The biodiversity opportunity for the railway is bright