Durham University

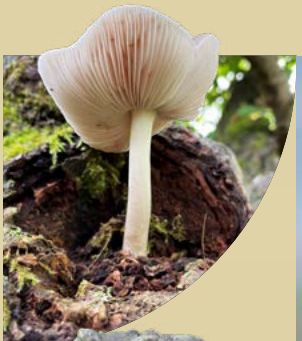
Inspiring the extraordinary

Enhancing Biodiversity at Durham

2022–2032









Our commitment to preserving nature

Our campus is situated in a beautiful landscape setting, with examples of high-quality wildlife habitats located within our Estate. These include deciduous woodland, grassland and wetland habitats.

We at Durham enjoy a high-quality environment and are committed to maintaining and improving the quality of this environment, both for the people who visit our campus, including those that live or work on and around it, and for the wildlife.

We are on a mission to actively reduce our carbon dioxide emissions and we thrive on producing world-leading and world-changing research, including much that directly addresses the issue of environmental sustainability.

As well as producing a new biodiversity strategy we have also joined a global alliance, that brings together universities from around the world to prioritise nature on university campuses and in their supply chains.

We have pledged to introduce more environmental sustainability into our research agenda and our Durham Award scheme. It is also an important part of our teaching and learning.

At Durham University we want to deliver excellence in education, research and wider student experience in the most sustainable way possible, and biodiversity is key to this.

Karen O'Brien
Vice-Chancellor and Warden

Executive summary

In this document we present a brief overview of the Biodiversity Strategy for Durham University, for the period 2022-2032. This is a highly abridged version of a much more detailed Biodiversity Strategy document that has been approved and adopted by the University Council.

The Strategy document is the culmination of many years of work by staff and students from the Department of Biosciences in the University, working together with, and supported by, members of the Estates and Facilities Team in the University. Much of the enabling work was driven by, and indeed funded by, the Durham University Environmental Sustainability Strategic Planning Group (ESSPG) and, in particular, the Biodiversity Group within ESSPG.

Here at Durham, we have an enviable green and biodiverse Estate, with fascinating wildlife on the doorstep of almost all departments and colleges. In this document, we provide a flavour of some of the key biodiversity attributes of the University Estate, and some high-level summary information on the types of work we will undertake over the next decade to ensure the university-managed land around Durham remains in a healthy state for biodiversity. This will benefit not only the stability of these local ecosystems but also the working and leisure environment of staff and students, as well as local residents and visitors.

We already undertake much work to maintain our biodiversity assets, and as a result, in 2022, became one of the founder members of the Nature Positive Universities Network, which was established at the UN Biodiversity Conference (CBP-COP15) in Montreal, Canada. This document provides a framework for how we will further this work.

Professor Stephen Willis
Biosciences Department and ESSPG Biodiversity Group Chair

Simon Park
Senior Energy and Sustainability Manager, Energy and Sustainability Team

What is biodiversity and why conserve it?

Loss of biodiversity has been likened to loosening rivets on a plane wing with each rivet being one species. Losing a few rivets makes little difference to the stability of the wing, however there comes a point when enough rivets are lost to destabilise the wing, dooming the passengers on board.

This analogy captures the risk of biodiversity loss and its importance both to ecosystem functioning and to society. It has been proven that more biodiverse ecosystems are resistant to changes such as invasive species and climate change. Furthermore, greater biodiversity can also offer higher levels of ecosystem services such as water filtration, flood prevention and nutrient cycling. Biodiversity can also influence mental health and improve physical health, through providing relaxing spaces for body and mind. We also have a moral duty to protect biodiversity and act as custodians of the environment around us, protecting and enhancing it for future generations.

Including biodiversity in our education and research

Biodiversity shapes the environment we live in and inevitably affects many of the subjects covered here at Durham University. Biodiversity study is incorporated into our taught modules, for example including how ecosystem services affect economics, the colonial legacy of many invasive species and the cultural importance of medicinal plants.

Research is a key aspect of the University and by protecting local biodiversity this research can be carried out effectively at the University. This provides opportunities for students and professors alike to study the local environment and to understand the influence of practical conservation measures.

Outreach

Managing our biodiversity will enhance the local area and lives of the City's residents. We will be working together with local bodies to ensure success of the project, whilst also engaging local people with biodiversity. The University maintains public footpaths through many of its wildlife-rich habitats, and conducts school (and more general) biodiversity outreach work on its grounds.

Quality of life

Biodiverse environments have been proven to increase the quality of life of people who engage with them. They provide green spaces for people to exercise and relax in, as well as offer space to engage with nature. Experiencing nature can have positive effects on mental/psychological health, healing, heart rate, concentration, levels of stress, blood pressure, behaviour, and other health factors (Sandifer et al. 2015*).

**Sandifer, Sutton-Grier and Ward (2015). Ecosystem Services, 12, 1-15.*

Our current biodiversity

The University has a considerable estate totalling 251ha of land across Durham. This includes a near continuously-connected landscape, with many areas of high biodiversity value and potential. The Estate is mainly split between woodland scrub (112ha) and the built environment (51.4ha). Farming and grazing land (53ha) and some further amenity grassland (27ha) complete the University Estate.

Durham University is situated within a highly biodiverse environment. Although our biodiversity strategy is aimed at increasing biodiversity across the Estate, it is essential first to understand which species currently occur. By understanding this, targets are being set to conserve and enhance current biodiversity, and to ensure key species and habitats already present are accounted for.

Woodlands

Our woodlands extend unbroken from Maiden Castle Wood in the north to Blaid's Wood in the south, with Great High Wood and Hollingside Wood linking them. Together, they are our greatest biodiversity asset, providing a large extent of habitat, including areas of ancient woodland that supports many specialist woodland species. We are currently developing a new Woodland Management Plan to ensure the long-term sustainability of the woodlands and their associated biodiversity.

Grasslands and farmlands

There is much scope for improvement to our grassland areas, which currently are principally amenity and rough grassland. Areas of farmland are mostly leased, which can limit the conservation work that can be undertaken, therefore we will be working with leaseholders to ensure positive conservation outcomes. We participate in schemes such as the Hedgehog Friendly Campus scheme to improve the management of field boundaries, and are trialling the creation of new species-rich grasslands.

Mammals

We are home to around 24 mammal species including up to eight species of bat, and healthy populations of Roe Deer, Red Fox and Badgers, with Otters breeding along the river.

Birds

Our Estate is home to large numbers of bird species and we've recorded over 100 species, including many that have declined rapidly in recent decades. Our woodlands support woodland specialists such as Woodcock, Jay and Sparrowhawk, with Tree Sparrows (which have declined by 95% nationally) still hanging on as a breeding species and Buzzard a likely new colonist in the future. Areas of scrub and hedges host many breeding warbler species including local rarities like Grasshopper Warbler and Red-listed farmland birds such as Grey Partridge and Yellowhammer.

Amphibians and reptiles

Amphibians are key indicators of water quality and are important food for many wetland predators. We have recorded populations of Common Frog, Common Toad and Smooth/Palmate Newts on the estate, though toads have declined markedly in recent decades. The creation of new ponds, and the recreation of long-lost ponds is a key priority for these species. Currently there are no records of reptiles on the Estate, which mirrors the situation around the Durham City area.

Invertebrates

Our Estate is home to a high diversity of insects including nationally and locally rare species. The ancient woodland areas and semi-natural grasslands are key habitats for invertebrates, and our woods host several moth species that are rarely recorded elsewhere in the county. They also support specialist woodland butterflies such as White-letter Hairstreak and Purple Hairstreak. Similarly, our wetlands accommodate locally rare invertebrate species, and our grasslands support species newly colonising the north-east as a result of climate change. Significant work has been done on surveying the University's moths which indicate important and healthy habitats across the Estate, though much work remains to be done censusing other invertebrate groups.

Plants

Home to some important plant species, including some which are locally rare, new work has begun across the Estate to create wildflower meadows to replace mown and amenity grassland. Our woodlands are well known for their spring flora, including ancient woodland indicator species such as Bluebell, Primrose, Wood Anemone, Wood Sorrell, Wild Garlic and Dog's Mercury. Some plants are very rare across the Estate, including 'Old Tom', the last Greater Tussock Sedge in the woods, and locally rare orchids in the grasslands such as Bee Orchid, Marsh Orchids and Twayblade Orchid. We plan to produce an inventory of our veteran trees to ensure their protection.

Enhancing biodiversity at Durham

The Biodiversity Strategy will be embedded into all relevant University processes. To maintain and enhance biodiversity across the University Estate, we have established a set of principles to be implemented, including the following:

1

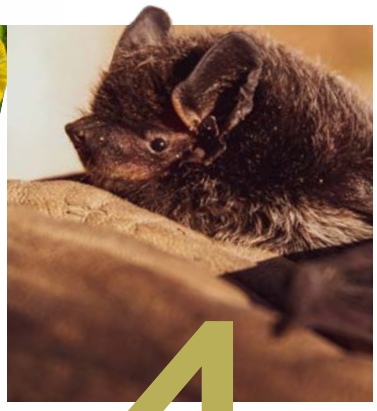
New developments to be planted with appropriate native plants wherever possible, prioritising planting plant species that are most beneficial for pollinators in bedding areas.

2

Native hedges to be established, maintained, and restored using native species that support high associated biodiversity, with management to maximise their value.

3

Grassland that is not used actively for sports or amenity use to be evaluated for adapted management to enhance biodiversity, including wildflower meadows. Cutting regimes to be adapted where possible to enhance value. Existing meadows to be managed to maximise their value.



4

Where possible, new buildings to incorporate biodiversity friendly measures at the design stage. Measures could include green rooves and walls, in-built nest boxes (for e.g. swifts, swallows and sparrows) and bat roosts (e.g. bat bricks).

5

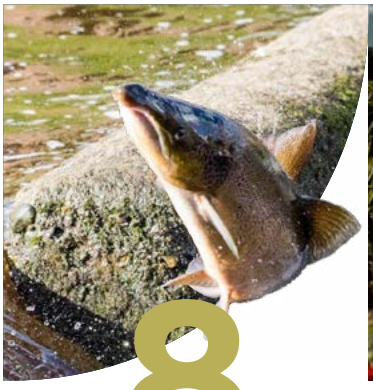
Increase the number of bug, bat, and bird boxes on the University Estate, to compensate for the lack of mature trees and deadwood, and maintain natural sites that already exist.

6

Retain all standing and fallen deadwood in situ unless it is a danger to the public; the latter to be felled and left on site. Leaving standing trunks or pollarding is highly preferable to complete felling, where possible, as both mature trees and standing deadwood are now rare within the University woodland.

7

Work to enhance soil management across the Estate (e.g. establish compost heaps to recycle suitable green waste) and to minimise detrimental run-off into waterways.



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Manage riparian habitats to reduce erosion, increase in-stream and bankside diversity and create undisturbed areas.

9

Maintain existing ponds to maximise wildlife benefit. New ponds should also be created across the Estate to better link existing ponds and wetland habitat.

10

Work to limit the extent of sealed surfaces to reduce runoff, which can affect both flooding of terrestrial areas and pollution to aquatic habitats.

11

Increase connectivity between existing University habitats and the wider landscape including local nature reserves and other areas of local wildlife value.

12

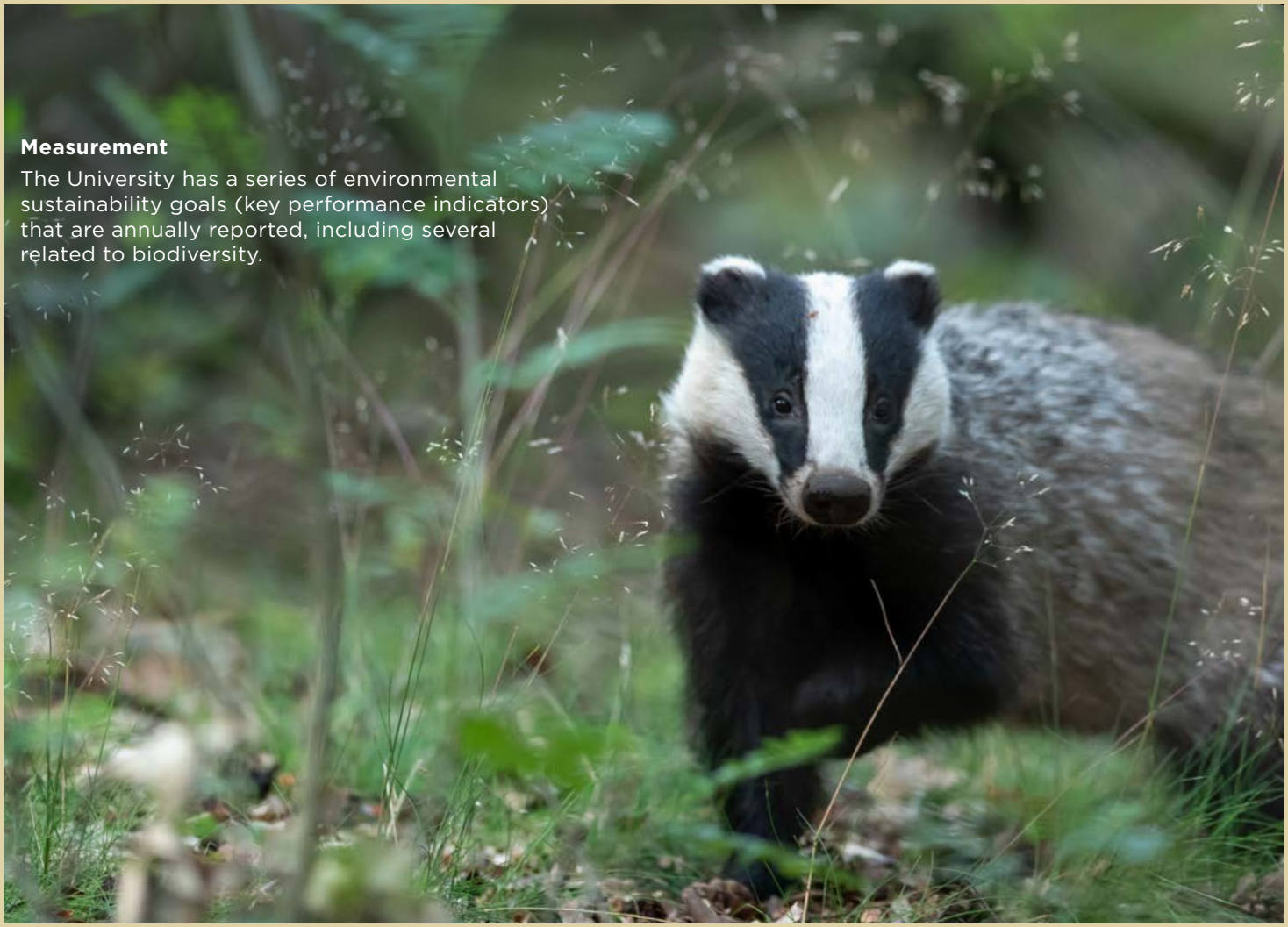
Work to eradicate invasive non-native species and disease if they threaten biodiversity, and manage the impact of non-natives.

13

Reduce chemical use across the Estate including pesticides, herbicides, insecticide, vermicide, molluscicide, fungicide and fertilisers.

14

Support enhanced monitoring and research to better understand the changing biodiversity of the Estate.



Measurement

The University has a series of environmental sustainability goals (key performance indicators) that are annually reported, including several related to biodiversity.

Key biodiversity targets include:

1. Net gain of biodiverse habitats.
2. Enhancement of biodiversity through habitat creation schemes.
3. Engagement with biodiversity conservation.
4. To maintain or enhancement the Estate's current species richness.
5. To maintain or enhance population levels of priority species.

We will use Natural England's (NE) Biodiversity Metric 3.1 to assess the net gain or loss of habitat over time. We will also employ the metric as part of any future planned development. This metric ensures no net loss of biodiversity and will benefit planning applications, involving quantifying habitat distinctiveness, condition, strategic significance, and connectivity.

This will enable us to quantify how any development would affect biodiversity and make recommendations to minimise its impact. We will also use a bespoke metric to summarise the condition of priority indicator biodiversity across the Estate.

NE's Biodiversity Metric aims to eliminate overall biodiversity loss by offsetting any losses (due to e.g. development), with equivalent enhancement elsewhere. This can involve improving existing habitats or creating new ones. The amount of offsetting required can be reduced by starting offsetting well before building work begins by creating a "bank" of biodiversity units.

A target for future work is to explore the holistic costs of university operating processes on biodiversity beyond the University Estate, using a process not dissimilar to the carbon accounting we already undertake.

Monitoring

Ongoing monitoring is critical to better understanding the biodiversity of the University Estate and to ensure conservation actions deliver the intended benefits. Where possible, we will encourage some of this monitoring to be undertaken by the wider staff and student population, to widen engagement with biodiversity across the university. We have used summer studentship schemes, for students interested in gaining experience in conservation and ecological surveying, to help with monitoring whilst simultaneously enhancing their employability. We hope to continue such schemes going forward. Annual surveys, combined with less frequent more focussed surveys, will ensure good progress on enhancing biodiversity to ensure that the University is meeting its objectives.

Curious to find out more?

For further developments and to find out how to get involved visit:
durham.ac.uk/biodiversity

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