UNIVERSITY OF WORCESTER

BIODIVERSITY STRATEGY

2024 - 2027

UNIVERSITY of WORCESTER

CONTEXT

Biodiversity is a term used to describe the variety of all life forms on earth. It includes habitats, species and the interactions between them. Human activity has always had an impact on the natural world and its biodiversity. This has increased exponentially throughout the 20th and 21st century and now we are experiencing widespread reduction in the extent and quality of natural habitats and the number of species that depend on them. The State of Nature (2023) report suggests that species in the UK have declined by 19% on average since 1970 and 16% of our species are threatened with extinction.

The University of Worcester is dedicated to upholding its Sustainability Policy and contributing to the UN's Sustainable Development Goals (SDGs) for Biodiversity. As an inaugural member of the Nature Positive Universities partnerships, we actively enhance biodiversity on our campus and participate in global efforts.

The UN's SDGs serve as a comprehensive framework to address a spectrum of global challenges, guiding our collective efforts towards a more sustainable future for all. Among these goals, Goal 15 stands out as particularly pertinent to our campus: Life on Land – aiming to sustainably manage forests, combat desertification, halt and reverse land degradation, and mitigate biodiversity loss by 2030. We have worked to a Biodiversity Action Plan (BAP) since 2008, overseen by the Strategic Biodiversity Management Group (SBMG). This plan, integrated into our ISO14001 Environmental Management System, serves as a cornerstone in our efforts to enhance biodiversity on campus. Regular updates ensure alignment with evolving goals and priorities, with a comprehensive review conducted every three years to refine our strategies and maximize impact.

The SBMG meets at least twice a year to implement the Biodiversity Strategy and BAP. This includes staff from the Sustainability Department, Academic Departments, Grounds Maintenance, students from the Nature Society, where possible, and external organisations. This latest version of the Biodiversity Strategy covering 2024 - 2027 is intended to provide a framework to set targets in the BAP.

OUR BAP PRIORITIES FOR 2024 - 2027:

- To continue our new habitat creation scheme across all of our university campuses, while maintaining and improving existing habitat.
- To prioritise recording biodiversity across our campuses, enabling us to more effectively assess the impact of our habitat management on campus wildlife.
- To engage staff, students and members of the wider community in biodiversity education and survey activities.
- To seek funding for biodiversity project through initiatives such as the Natural Networks Programme.
- To continue to work with partners organisations to enhance biodiversity more widely, such as the Worcestershire Biodiversity Plan.

CAMPUS BIODIVERSITY & WELLBEING

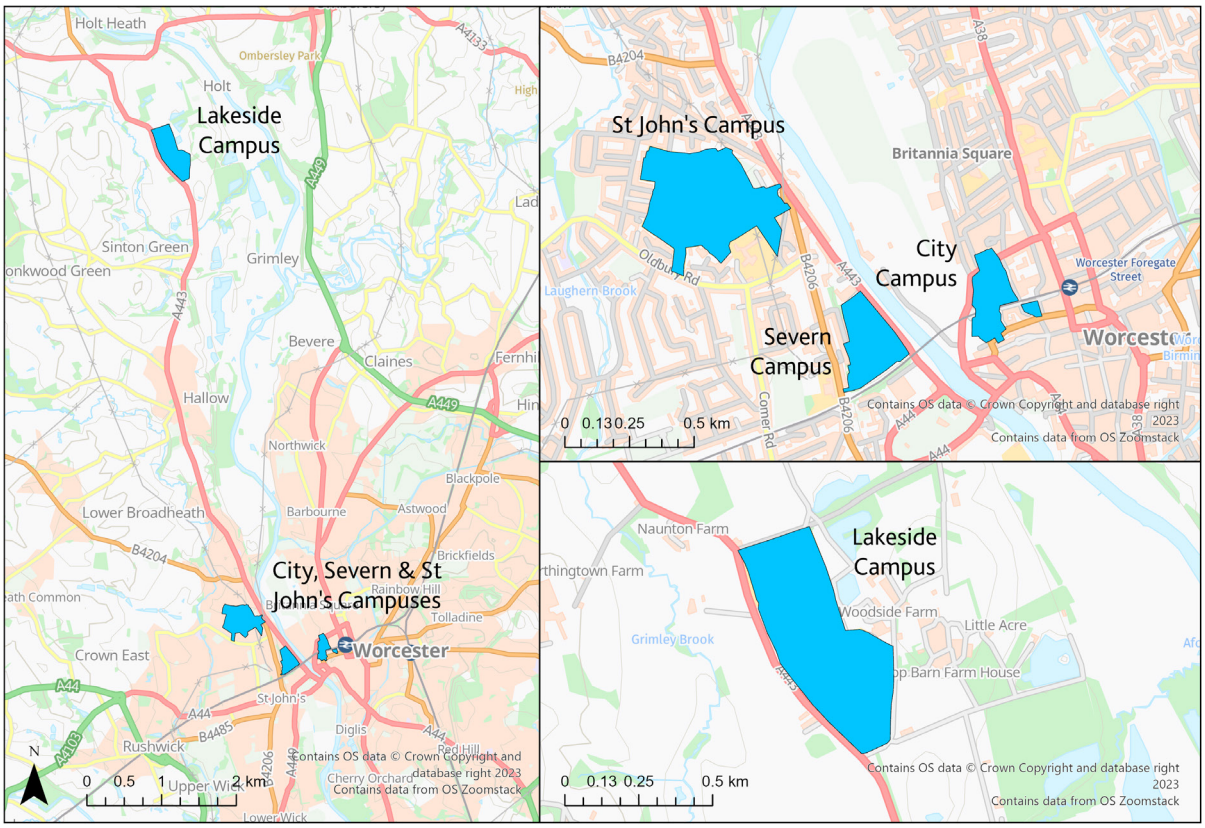
The importance of nature on wellbeing is now widely recognised, with time spent in natural environments being associated with lower mortality, cardio-vascular disease, lung cancer, and mental health diseases[1]. Within urban environments, where risks such as air pollution and climate change-related impacts of extreme temperatures may be concentrated[2], improving access to nature is vital.

During its first sixty years, the University occupied a single site, the St John's Campus. Since gaining full university status in 2005, it has expanded considerably, doubling its student numbers. Simultaneously, the university invested significantly in enhancing its infrastructure and facilities, acquiring multiple major development sites. Presently, the University of Worcester comprises four campuses: St John's, City, Severn and Lakeside.

We recognise the importance of these campuses in contributing to biodiversity, but also the role that they play in the wellbeing of our staff, students and the wider community. A survey in 2024 demonstrated that 55% of staff and 80% of students spend time in nature to relax; 59% of staff and 20% of students reported that they use campus walking routes such as the Green Mile for meetings and relaxation (n = 254 staff and 241 students). Furthermore, 54% of staff and 31% of student respondents were aware and engaged with managed areas for wildlife on our campuses.

[1] Marselle et al. (2019) Biodiversity and Health in the Face of Climate Change. Springer: Switzerland. Available at: https://doi.org/10.1007/978-3-030-02318-8

[2] Taylor & Hochuli (2015) 'Creating better cities: how biodiversity and ecosystem functioning enhance urban residents' wellbeing'. *Urban Ecosystems*, 18, 747 - 762.



Location of campuses in Worcestershire

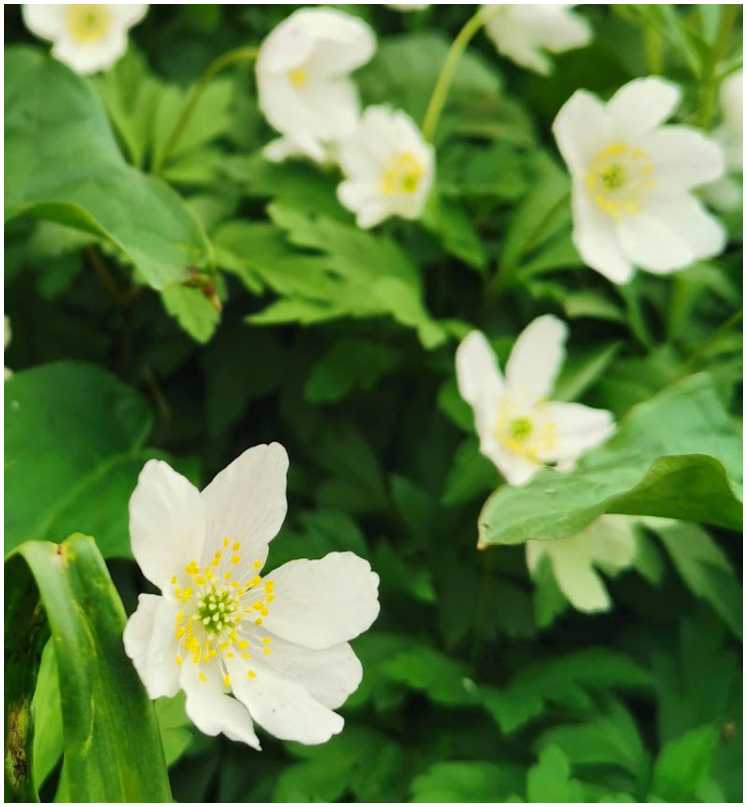
ST JOHN'S CAMPUS

St John's Campus occupies 17.56 ha of land to the east of Worcester City Centre. The campus infrastructure consists of educational, social and residential facilities embedded into a leafy parkland arrangement.

The landscape is mainly hard surfaces, such as buildings, roads and car parks interspersed by formal planted areas, trees, and grassed areas, but several areas are managed for biodiversity. These areas range from native wildflower meadows, fruit trees, insect hotels and dead wood habitats, to woodland edge habitats. This campus includes a wide variety of mature trees and an extensive hedgerow network. Trees are classified by arboriculture surveys according to their rarity, ecological importance, landscape value, cultural significance and potential remaining lifespan. Some trees on campus are subject to Tree Preservation Orders (TPOs), preventing the removal, topping, lopping and wilful damage or destruction of protected trees. The university mile walking route allows visitors to explore these more natural areas around St John's Campus. There are also opportunities for students and staff to grow their own food on campus allotments. More recently, a new wellbeing garden has been added in spring 2024; as part of the planting for this project, 75 m^2 of native hedging in a double row has been added.

A Phase 1 Habitat Survey identified a Badger (*Meles meles)* sett within the boundaries of St John's Campus. As of 2024, Badgers are still evident on the campus and arrangements are in place to protect their population and their habitat in line with legal requirements. This campus also provides several hedgehog houses and a hedgehog highway, for which we were awarded Gold Hedgehog Friendly Campus status in 2021.

Conservation Area



We established an area which is specifically managed for biodiversity to the south of the campus. This incorporates a woodland area with native woodland flowers and dead wood habitat, together with a meadow area of native wildflowers. This meadow area was extended in 2023, replacing an amenity grass lawn. There are also two small ponds which contain a variety of marginal, submerged and floating plant species, invertebrates and amphibians. This area is accessible via the university mile and has become a place of quiet contemplation and bird-watching, which is helped by bird feeders and an interpretation board on identifying birds.

Wildflower Areas

After the establishment of the Malvern Meadow in collaboration with the Malvern Hills Trust in October 2012, we have added several further wildflower areas. Annual native poppy and cornflower areas can be found alongside campus roads, designed to enhance well-being of visitors to campus and provide food and shelter for native wildlife. After receiving Natural Networks funding in 2023, a second perennial wildflower area was established nearby, which incorporates a wild bird seed mix. The combination of annual and perennial wildflower meadows has raised the profile of habitat management for biodiversity and wellbeing at the university, leading to further wildflower habitat creation at our other campuses.

CITY CAMPUS

The City Campus occupies 3.12 ha of land within the city centre on the site of the former Royal Infirmary. It is an urban mosaic comprising of buildings, such as the Hive, large areas of hard-standing, improved grassland and a variety of landscaped areas. While the main City Campus site is primarily urban, we are working on ways to improve opportunities for biodiversity. There are a variety of mature standard trees and hedgerows, which contain a rich assemblage of native species. These features provide valuable opportunities for foraging, nesting, roosting and shelter for a wide range of animals and are particularly important in the urban environment. With guidance from the Worcestershire Wildlife Trust, we have installed 12 artificial Sand Martin (*Riparia riparia*) nesting boxes on this campus in the hope of providing additional nesting oppotunities for this species close to the River Severn.

More recently, given the success of our wildflower areas at St John's Campus, we have taken the decision to leave a section of City Campus banks, previously an area of amenity grassland, unmowed from 2024. We hope that the growth of native grassland plants in this area, due to the change in management, will create new 1,500 m^2 meadow area. Furthermore, a second university allotment has also been added to the lower part of this area, which benefits from glasshouse facilities at the Student Sustainability Hub for plant propagation. Further annual poppy and cornflower mix wildflower areas have been added (25 m^2) in verges around buildings. A number of bat and bird boxes have been installed around City Campus buildings.

Sustainability has been central to the design of The Hive. Over 4,000 m^2 of the soft landscape at the site is dedicated to enhancing biodiversity. These habitats are complemented by a number of innovative wildlife features to provide bird nesting, bat roosting and stag beetle hibernacula opportunities. The landscape provides for interaction between people and wildlife through proximity, interpretation and interactive features.

SEVERN CAMPUS

This campus occupies 5.6 ha situated between the St John's Campus and the City Campus. It is home to the Medical School, University Arena, and the Riverside building, with development in this area ongoing. While the planting around this campus area is mainly ornamental shrubs and trees, there is an area of woodland set aside and enhanced for biodiversity that protects an active badger sett. Management of this biodiversity area is in consultation with the Wildlife Trust. As part of the development, a number of local fruit tree varieties have been planted throughout the car park areas, tying in to Worcester's heritage.

A number of common bird species have been recorded on the site, including Blackbird (*Turdus merula*), Robin (*Erithacus rubecula*) and the RSPB 'amber status' Dunnock (*Prunella modularis*), although no nests have been found.

LAKESIDE CAMPUS

The Lakeside Campus, acquired by the University in 2016, is a valuable resource that harmonises sport, education and development within a natural environment spanning 50 acres. This campus incorporates an Education Centre equipped with state-of-the-art teaching and meeting facilities and a scenic lake used for water-based activities such as sailing, kayaking and other outdoor sports. In 2018, the Lakeside Campus created a dedicated Forest School and Bushcraft area. This space, planted with 450 native trees, fosters outdoor learning, survival skills and a deep connection to nature.

Beyond recreation, the lake also provides a vital habitat for wetland species, such as ducks, swans and moorhens. To maintain ecological balance, the campus management employs effective water quality management techniques. These methods, whether physical or organic, prevent excessive vegetation growth, particularly algae.

Alongside broader campus development plans, this campus prioritises impactful biodiversity projects. Notably, a collaborative effort with the Worcester and Malvern RSPB Group focuses on supporting farmland birds.

THE MOORS PLAYING FIELD

The Moors playing field is an 8.62ha area of land to the east of the River Severn. It is regularly inundated with flood water from the River Severn. The site is dominated by improved grassland and bordered by a variety of mature trees.

The most valuable tree specimens are considered to be a number of high-quality Lime (*Tilia* sp.) trees along with Small Leaved Lime (*Tilia platyphyllos*), Cherry (*Prunus* sp.) and Oak (*Quercus* sp.). In 2023, we removed the American football posts and incorporate a wildflower meadow.

CREATING NEW HABITATS

As the University continues to grow and expand, opportunities will be sought to not only protect existing biodiversity, but also to create new habitats and features that enhance our campuses, such as new wildflower meadows, woodlands, and ponds.

Tree planting

Several factors are considered before tree planting is undertaken, including the position and suitability of the proposed species type. The following objectives are considered to improve iodiversity when tree planting is carried out: 1) increasing habitat connectivity; 2) improving the quality and size of existing habitats; 3) creating a mosaic of habitats; 4) adding native tree species of local provenance and 5) creating new habitats.

Wildflower areas

Establishing new areas for wildlife meadow creation needs to be balanced with campus development plans and priorities. Within this, there is scope to increase the wildflower areas on the University campuses. We plan to identify new areas where wildflowers can be established and managed.

Nesting and roosting boxes

While our goal is to cultivate natural habitats on our campuses, fosterning breeding populations of birds and bats, we recognise that nesting and roosting boxes, particularly in urban environments are beneficial for many species. We look at each site individually to incorporate bird and bat boxes, ensuring that we are accommodating species most likely to be found there. A range of boxes have been put in place throughout St John's Campus and City Campus. We will continue to consider and fund the placing of new nest and roosting boxes to benefit a variety of species, with particular consideration given to species of conservation concern.

Compost heaps and wood piles

Decaying wood piles support many fungi, bacteria and lichen species, and provide habitat, food and shelter for a variety of vertebrate and invertebrate species including worms, snails, millipedes, centipedes, spiders, mites and insects. These provide food for many bat and bird populations. To maximise the benefits provided by decaying wood, the University looks to incorporate wood piles within its conservation areas, within vegetation patches and under trees. Where trees are removed due to safety concerns, the dead wood is utilised on site to create new dead wood habitats.

MANAGING BIODIVERSITY

The University establishes clear biodiversity management objectives within its Biodiversity Action Plan. These objectives undergo regular review and updates, overseen by the Strategic Biodiversity Management Group. Here, we include an overview of how we manage biodiversity across our campuses.

Trees

The University has a documented Tree Policy which applies to all trees including those within boundary hedgerows, on all sites. We also carry out regular tree surveys, to manage and maintain the health and biodiversity value of all trees on their land. All tree management interventions are carried out by qualified persons, to a high standard.

On-going tree maintenance is carried out for the following reasons: 1) to improve safety by removing damaged or weighty limbs; 2) remove branches which have become in contact with buildings; 3) improve shape; 4) maintain the health of the tree; 5) improve sight lines on corners or access routes and 6) improve security. Tree management activities are carefully timed to occur outside the breeding season of bird species (early March to late August), wherever possible, to minimise the impact on breeding birds and other associated species. Where possible, deadwood is allowed to remain on trees to provide habitats for insects, if it does not cause a hazard to health and safety.

We regularly identify opportunities to plant new trees and undertake work to improve the biodiversity value of trees. For example, coppicing of hazel trees is undertaken on the St John's Campus on a three-year rotation and fruit trees within the 'Secret Garden' are managed according to a replanting scheme.

Hedgerows

The overarching aim of hedgerow management is to encourage a structurally diverse, gap-free and dense assemblage of native species with good base cover to accommodate a wide range of species.

A winter trimming schedule is carried out on a 2-3 year rotational basis, to encourage structural diversity and to provide optimum berries, fruit and nesting opportunities. Hedgerow laying is undertaken to improve the structure and longevity of hedges. Opportunities are also sought to connect hedgerows and other vegetation patches by planting new hedges of native species. Management exclusion zones are considered within hedgerow-to-grass boundary areas. In these areas mowing is restricted to an annual or biannual crop to create a structurally diverse and graduated zone where chemical fertilisers and herbicides are not applied.

All hedgerow management and basal grass mowing is carefully timed, wherever possible, to minimise the impact on breeding birds and other hedgerow species.

Lakes, ponds & water bodies

Pond management activities are carefully timed throughout the year to minimise impact on biological features and increase biodiversity benefit. During autumn, ponds are cleared of dead vegetation in a way that protects invertebrates and amphibians. Netting is used to prevent excessive amounts of leaf litter falling onto the main pond on St John's Campus to prevent unwanted nutrient level increases and excessive debris within the water.
During spring, further clearance work is undertaken to maintain open access to the area as a teaching resource. New plants are introduced as appropriate and existing pond plants are reorganised to afford protection to breeding freshwater invertebrates and amphibians. In summer, management activities focus on maintaining water levels and keeping the area clear of excessive vegetation to improve oxygen levels. Overgrown marginal plants are trimmed to afford continual accessibility for students and staff. The University looks to increase biodiversity in the ponds through activities such as installing new planting, rock piles, corrugated sheeting, pond ledges and leaf piles.

The pond on St John's Campus acts as an important teaching resource, especially for students in the School of Science and Environment and School of Education, therefore our management plan also takes into account access and safety issues around the site.

Grassland

The University of Worcester has several types of grassland that require maintenance and conservation. Amenity grassland management needs to balance a variety of needs to maintain a good visual appearance and parkland design for the University, for sports and recreation and for biodiversity. The University identifies suitable areas where mowing regimes can be altered to encourage species-rich grassland to develop. Rotational hay meadow mowing regimes with no chemical inputs are put in place wherever this can be balanced with other priorities. The University uses the minimum required amounts of chemical treatments and fertilisers on all grassed areas. Playing fields are managed for sports utility value. Management procedures involve regular mowing and low to no fertilisers and herbicides.

However, where we have native wildflower meadows, management is specific to the specific requirements of the mix. This usually involves an annual cut, taking place in the summer, with the cuttings removed to reduce soil fertility, enhancing the growth of native flowering plants.

Formally planted areas

Formally planted areas are managed for maximum visual appeal. Wildlife gardening principles are also considered to create diversity and provide food and habitat sources for wildlife. When planting is undertaken, consideration is given to creating diverse assemblages of species and habitat structure to provide a variety of micro-habitats and support insect lifecycle requirements. Native, sustainably sourced species are considered to be a key element of this.Wherever possible, planting is designed to incorporate nectar-rich herbaceous annuals and perennials within flower borders and patches or under hedges and trees. A range of species that have varying growth flushes and flowering times are considered to provide a good supply of seeds, berries and flowers throughout the year in order to support a host of visiting or resident species. When undertaking annual management, some seed heads are left on perennials throughout the winter as these can offer a food source and hibernation site for a variety of birds and insects.

Conservation area

To maximise the biodiversity value of St John's Campus, the University has developed a conservation area. The main ecological features include grassland that has been managed to increase species richness, various trees species of differing ages, decaying wood features, intentionally created ground undulations, hedgerows, and a pond. This area provides a valuable teaching resource and is used to develop students' practical skills.

The conservation area is managed according to a traditional hay meadow management regime. Species richness is aided by rotavating and reseeding specific areas. The University will continue to protect and manage the area for biodiversity and education.

Wildflower seeds are supplemented, collected or allowed to fall in the area and cuttings are removed to prevent nutrient build up that limits species diversity. To further enrich the area plants have been introduced that have been grown from seed and sourced locally, such as from the Malvern Common and Worcestershire Wildlife Trust's Lower Smite Farm.

MANAGING INVASIVE SPECIES

Some non-native species are invasive in that they are hard to control and have a negative impact on native biodiversity. The most invasive are subject to management control by law. Japanese Knotweed is one such species. It was present on the Severn Campus but has since been eradicated by the University. All of our sites are compliant with the ISO 14001 international standards on environmental legislation, to prevent the introduction and significantly reduce the impact of invasive alien species.

The University will continue to monitor for any signs of Japanese Knotweed and undertake any management required according to the DEFRA Guidance 'Prevent Japanese knotweed from spreading' 2018. As well as the requirements within the Wildlife and Countryside Act 1981 (as amended), the University is aware that it needs to comply with the Environmental Protection Act (Duty of Care) Regulations 1991 and Hazardous Waste Regulations 2005 in disposing of any Japanese Knotweed.

Pondweeds *Elodea canadensis* and *E. nuttallii* are North American natives that have naturalised in the UK and become problematic invasive species. Both species are commonly sold as oxygenators for the horticultural trade and can escape into the wild if disposed of irresponsibly. These species are found at Lakeside Campus and physical management control measures are used where they are effective and appropriate.

MONITORING BIODIVERSITY

Monitoring is an important component of wildlife conservation and enhancement as it can inform management interventions by highlighting current conditions, ecological changes and long-term trends. While we have conducted habitat and species surveys previously, a key priority of strategy 2023 – 2027 is to enhance biodiversity recording across our campus areas, enabling us to more effectively evaluate our habitat management.

Academic departments, the Sustainability department, Grounds Team and student societies such as the Nature Society, have worked together to undertake habitat and species surveys, collating data on the occurrence of mammals, reptiles, amphibians and invertebrates, primarily on St John's Campus. Furthermore, a 2023 – 2024 Green Impact Project has focused on mapping biodiversity features across our campuses.

We aim to continue monitoring St John's Campus, but prioritise monitoring efforts on our other campuses to gain a wider picture of the biodiversity of our land. In 2024, we established a new means of recording biodiversity around campuses on iNaturalist. This is an open access recording system, where records are verified by the iNaturalist community, which then are taken into the national biodiversity dataset and verified. As part of this the University has a project site page, where records from iNaturalist are collated based on the campus boundaries, allowing anyone accessing the project page to view biodiversity records around our campuses and contribute to them.

We intend to create more training opportunities for students, staff and members of the public relating to biodiversity monitoring as part of this project. These records will be added to those already created using other recording schemes, e.g. iRecord, eBird and records from professional surveys undertaken during development works. We will particularly prioritise recording from Lakeside, City and Severn Campuses, as these are under-recorded currently. The University will also continue undertaking tree surveys and hedgerow surveys to assess their composition, quality and 'connectivity' and to inform management practices. We will disseminate information on biodiversity records on an annual basis, but more regularly where possible.

A Lunar hornet moth pair (*Sesia bembeciformis*) recorded on St John's Campus

ENGAGEMENT

Working in partnership with local organisations, raising awareness and maintaining and enhancing skills for biodiversity is essential to ensure the effective implementation of this Strategy and its associated Biodiversity Action Plan.

Partnerships

The University is committed to working in partnership with local and regional groups to benefit from their knowledge, experience and support whilst also supporting wider biodiversity objectives. We have long-standing relationships with RSBP, Worcestershire Wildlife Trust, Malvern Hills Trust, Worcester City and Worcestershire County Councils (WCC).

Over the coming three years a key focus will be on further developing the links with the Local Nature Recovery Strategy led by the WWC, working collectively with charities and public bodies committed to working together to deliver the regional BAP. The University will continue to consult and engage groups such as the Worcestershire Wildlife Trust and RSPB on its projects. In association with our priority area of biodiversity monitoring around our campuses, we will aim to develop links with the Worcestershire Biological Records Centre and Worcestershire Recorders.

Communication

Initiatives are regularly identified on how to communicate biodiversity. The University has created a website where short articles on biodiversity are posted and feedback given from partners. This can be found at www.susthingsout.com. Information about biodiversity initiatives is also regularly posted on the Sustainability Department website.

Biodiversity areas on site are intended not just for wildlife but also as spaces for education and wellbeing. The 'University Mile' at the St John's campus encourages staff, students and visitors to explore the environment, helping them to engage with nature. Nature Trails have been established on St John's and Lakeside Campuses, with associated leaflets highlighting nature on the routes in different seasons.

We will regularly review the need for new leaflets, posts, QR codes and information boards where benefits have been identified across all of our campuses with the aim of engaging students, staff and the wider community in our biodiversity and sustainability strategy.

Training

The University of Worcester played a pivotal role in advancing biodiversity awareness through its 'Managing Biodiversity on Campus' Conference, held in collaboration with the Environmental Association of Universities and Colleges in April 2016. Most recently, we were awarded two 'Highly Commended' in the Green Gown Awards 2023, one in the Nature Positive category around our initiatives to promote biodiversity, and an International Green Apple Award for Environmental Best Practice 2023.

We recognise the importance of continued professional development in this area. Our Grounds Teams regularly identifies and attends relevant training courses and events, such as on native hedgerow planting, to ensure that they stay up to date on good practice. This commitment to ongoing education ensures that the University's green spaces thrive while adhering to ecological principles.

We have recently launched our iNaturalist recording scheme, which is part of the global iNaturalist Network. Through this initiative, we hope to engage more students and staff in biodiversity conservation and monitoring efforts. Co-founded by the Student Union, our Student Sustainability Hub aims to foster sustainability awareness. As part of these two initiatives, we aim to assess training needs related to biodiveristy conservation and monitoring, empowering individuals to actively contribute to environmental protection.

GOVERNANCE, REVIEW & REPORTING

The Strategic Biodiversity Management Group (SBMG) is in place at the University to oversee the implementation of the Biodiversity Strategy and its associated Biodiversity Action Plan. The SBMG meets 2 - 3 times a year and updates the Biodiversity Action Plan regularly. The Biodiversity Strategy is reviewed every 3 years by the Sustainability Strategy Committee. The Strategy is published on the Sustainability Department's website. The University also reports on the progress in managing and enhancing biodiversity on its campuses as part of its annual sustainability report to the Board of Governors and case studies are published in the Annual Sustainability Report which is independently verified and audited.